Trains

JUNE

25¢

"In all the world no job is being better done today than by the Railroads"

HON. CLARENCE F. LEA
Chairman, Committee on Interstate and Foreign Commerce
HOUSE OF REPRESENTATIVES

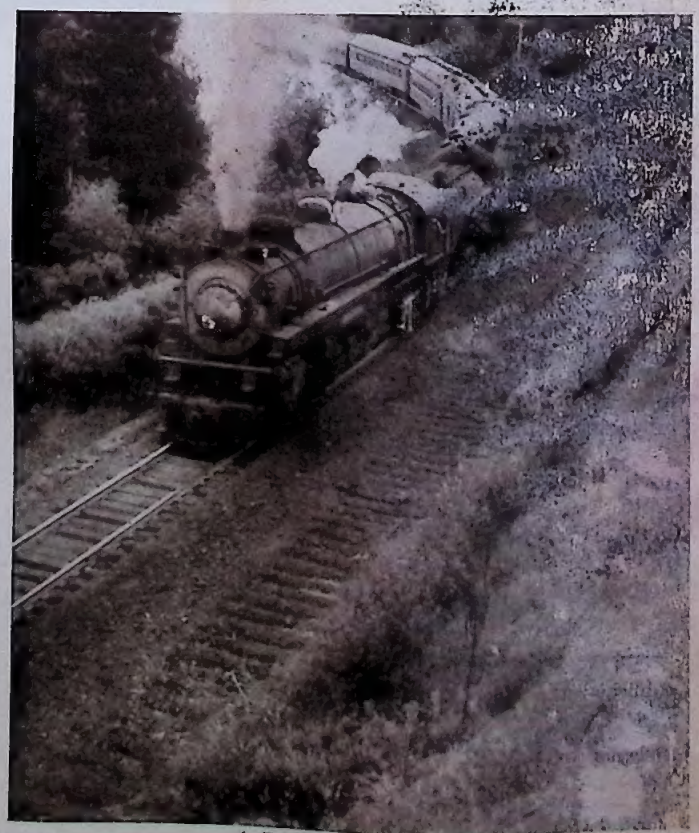
Richard Fleming.

" . . . a stranger in a strange land."

Due to a certain amount of non-electrified spurs and interchange tracks, the steam locomotive is a familiar sight on Pacific Electric. At the present time five switchers are busy, mostly with war traffic in the highly industrialized harbor area. The 1507 is the latest acquisition and came from Southern Pacific. At one time a steam 0-6-0 was operated over portions of the PE protected by trolley contact signals, and it carried a pole trolley on the cab roof to work the signal contactors. Heaviest PE locomotive is a steamer, Mountain type No. 1761.

In the Siskiyous.

Train 7 doesn't run here any more, but last Summer it was a sight to see as it tackled the grade out of Ashland, Ore., on the Southern Pacific's Siskiyou line, with a Santa Fe-type freight locomotive on the front end. The newer Cascade line, to the east, handles the through Portland-San Francisco business, and the Siskiyou route now hasn't any through train, and a local only part of the way.



A. R. Hopfer, Box 3, Jackson Star Route, Medford, Ore.

Back cover.

Central Vermont uses the Connecticutt River Valley as a natural north and south route from the seaboard at New London, Conn., up through New England. One of its five Consolidation-type light freight locomotives makes a pretty smoke effect battling the upgrade north of Brattleboro, Vt.

Waybills

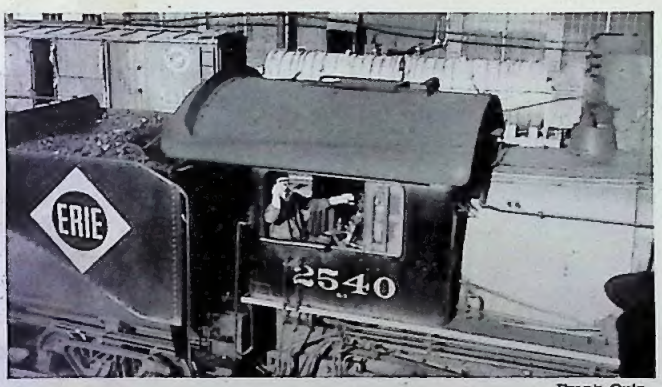
There is a knack to getting the most out of your railroad fare. In the first place, never buy a ticket in a hurry. On any lengthy trip a number of different rates may apply for various routings, and the ticket agent can suggest more and better possibilities if you allow him ample time to look up the tariffs. If a passenger agent is available, ask for his services. He is less likely to be rushed than the man at the ticket window. Tell all you can about where you want to go and how you want to go. Many times other cities can be included in your routing at a very slight extra cost, or the omission of a stop or two may save a lot of money. Try to get a round trip rate if at all possible. It is not always necessary that a round trip follow the same routing in both directions. One of our men once made a circle from Milwaukee through Chicago, St. Louis, Kansas City, Omaha, Minneapolis, and back to Milwaukee and had the mileage figured at the round trip rate on the basis of a trip to Minneapolis and return! The railroad passenger men are glad to help. Just give them every chance.

Memories:

The fast action and sulphurous atmosphere in Lake Street Tower when the *Victory* came in with a longer train than reported and nearly tied things up at a busy time by sticking out over the lead track.

Colorado & Southern narrow gauge engine, cinder chutes and all, steaming into the Denver roundhouse after a trip from Leadville, not so many years ago.

A. C. K.



Frank Quin.

Trains

Editors: A. C. Kalmbach, Linn H. Westcott, Willard V. Anderson

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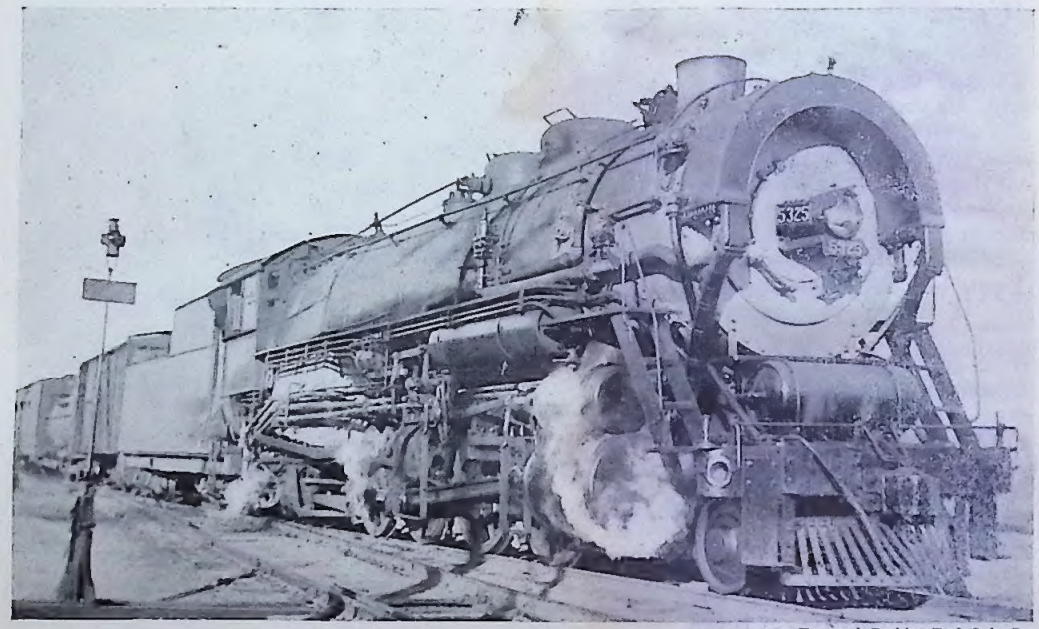
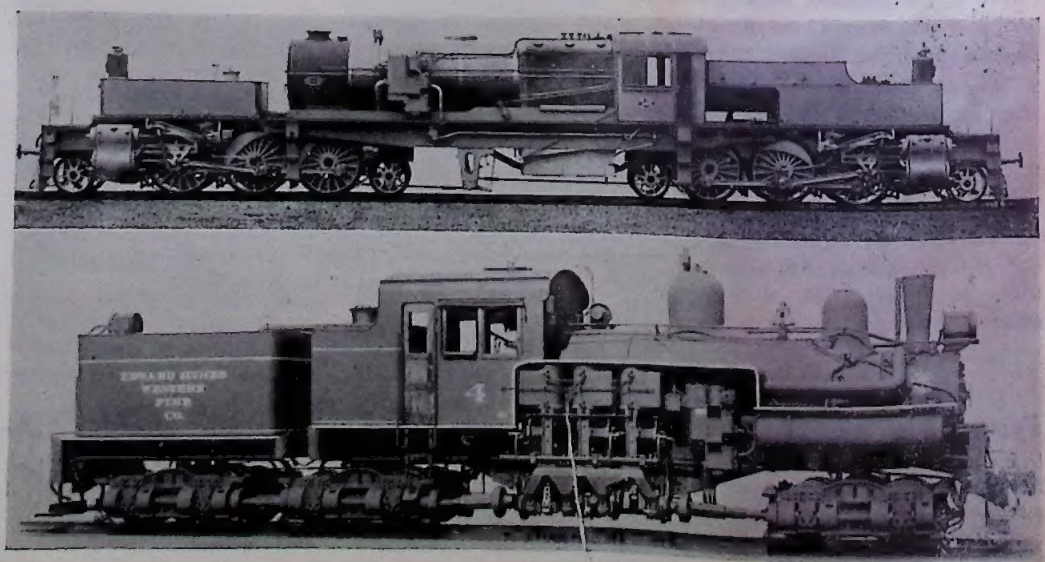


Bernard Corbin, Red Oak, Ia.

Whether you see it or not, almost every locomotive has a heater.

The Burlington Class O-3 Mikado freight locomotive above is equipped with probably the most conspicuous type of feedwater heater, the outside-mounted Coffin. Most Coffin heaters are mounted inside the smoke box and are not noticeable except for external piping. This make of heater is of the closed type—that is, the feedwater is kept within closed piping and the exhaust steam is circulated around the pipes so as to heat them. The warm water condensed from the exhaust steam then goes to the tender and is run into an open-type heater there, where it heats the feedwater by direct contact and mixing. The Worthington heater, on the contrary, is entirely of the open type. The exhaust steam is merely mixed right in with the cold feedwater, heating it. The Brazilian Beyer-Garrett-type locomotive (San Paulo Railroad) and the Shay lumber railroad locomotive (Edward Hines Western Pine Company) below are both equipped with Worthington Type BL heaters, which look something like large air pumps, on the boiler side.



Worthington Pump & Machinery Co.

Worthington Pump & Machinery Co.

Type BL Worthington. This Erie Railroad Berkshire-type freight locomotive, built by Baldwin in 1928, is equipped with the Type BL Worthington feedwater heater. This is the earlier Worthington type and is all in one unit, mounted under the running board over the third and fourth drivers. Later types have the pumps separated from the heater itself.

Glorified Hot-Water Heater

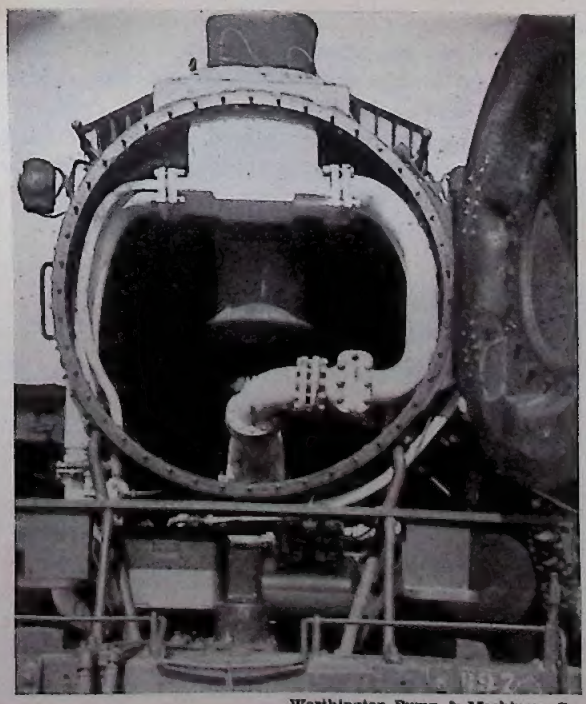
★ **The almost universal feedwater heater saves about 15 per cent of fuel by using exhaust steam.**

By I. E. August.

HAVE you ever watched the tea kettle when your wife adds a little more cold water to the bubbling pot? Immediately the boiling ceases, and it may be a matter of minutes before the steam blows out at its former pace. Old types of locomotives had this same trouble when water was pumped into their boilers; energy was used to heat the cold water at the expense of steaming capacity, while waste heat went up the stack with the exhaust.

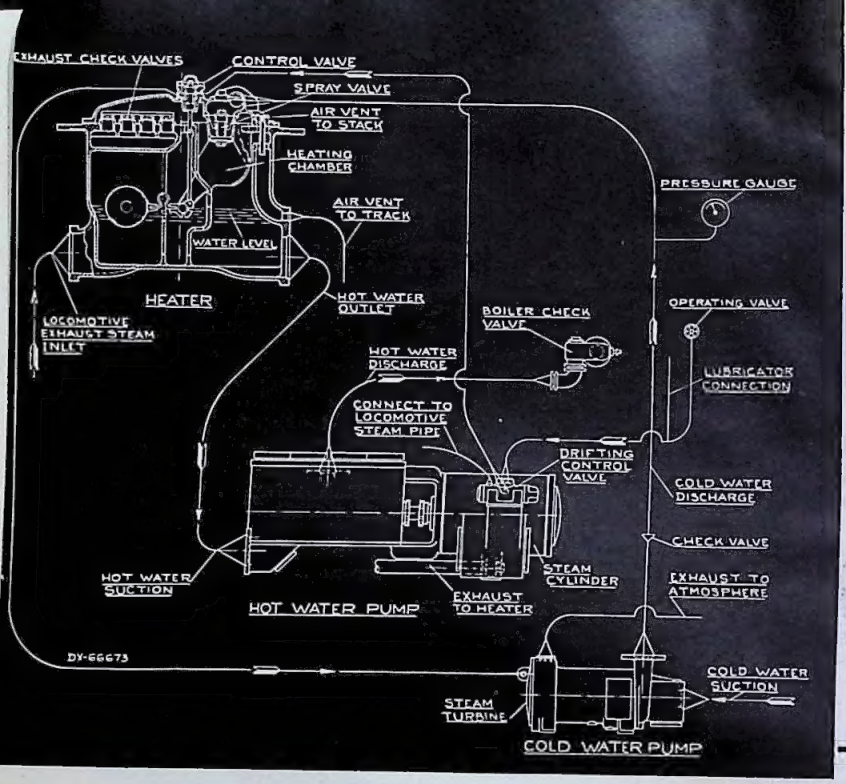
Modern locomotives are equipped with an auxiliary tank in which the water is heated before it is fed into the boiler. This tank is called a feedwater heater, and is nothing more than a large hot-water heater much like the one you use every Saturday night at home. It gains its greatest efficiency from the fact that it not only prevents cold water from entering the boiler, but does so by means of the heat from the otherwise wasted exhaust.

The subject has periodically occupied the attention of locomotive builders and railway men since almost the very beginnings of the



Worthington Pump & Machinery Co.

Type S Worthington heater. In contrast to the Type BL heater, the S and S/ types are made with each portion of the mechanism a separate unit. Here the heater is at the top of the smoke box, inside, and the pumps below, on the pilot beam.



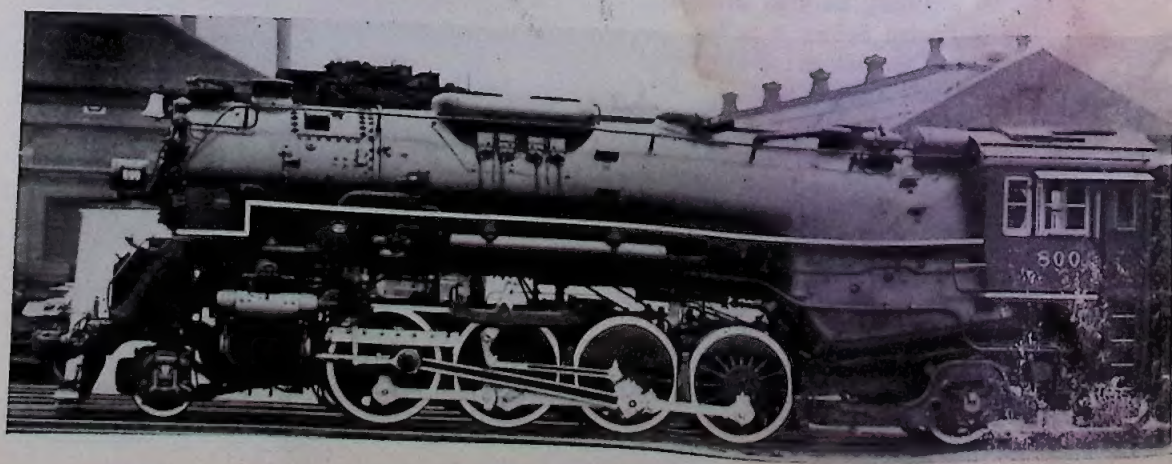
How the Worthington SA

The diagram to the left traces the course of water, exhaust, and live steam through the Worthington Type SA heater. The SA is built with the cold-water and hot-water pumps and the heater as three flexibly separate units, which can be mounted to help balance the locomotive weight. The diagram to the right shows a typical installation. Water starts at *E*, goes through the cold-water pump (6), to the heater (*B*), then through the large pipe to the hot-water pump (*C*), and thence into the boiler through the check valve (*D*). Exhaust steam goes from the exhaust nozzle (*A*) to the heater (*B*). Live steam runs from a shutoff valve in the cab (1) to the hot-water pump (2), which is controlled by pilot steam

locomotive itself. However, it is only in comparatively recent years that railroad men began to realize the practical value of a feedwater heater on a locomotive, and most progress has been made within the last 25 years or less. Now feedwater heating is considered practically a necessity, and nearly all new locomotives are equipped with feedwater heaters at the locomotive works and full allowances are being made for the extra capacity and savings the heater makes possible.

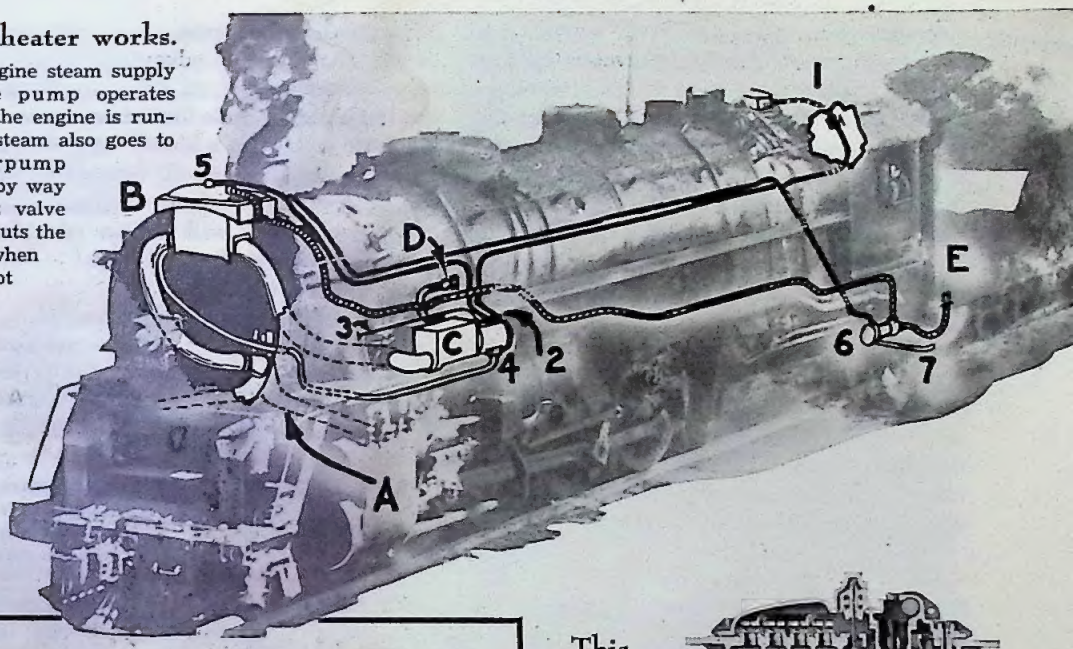
Since waste heat is used to heat the feedwater, let us see just what sources are available. First is the heat in the exhaust gases that have already given up some of their heat to the boiler, in the fire box and the flues. Various attempts have been made to reclaim some of this heat with a feedwater heater, but such attempts have never been very successful, due mainly to lack of sufficient space in the locomotive front-end to place the heating surface necessary for an appreciable heat transfer to the feedwater. Sooting of these surfaces was a problem, since soot materially reduced the heat transfer. Scale formation in the tubes also gave much trouble.

The second and appreciable source of waste heat is the exhaust steam. It may surprise some to learn that with average steam



feedwater heater works.

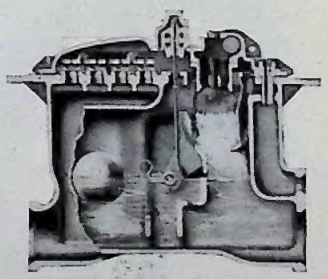
from the engine steam supply so that the pump operates only when the engine is running. Live steam also goes to the waterpump turbine (6) by way of the float valve (5) which shuts the pump off when water is not needed.



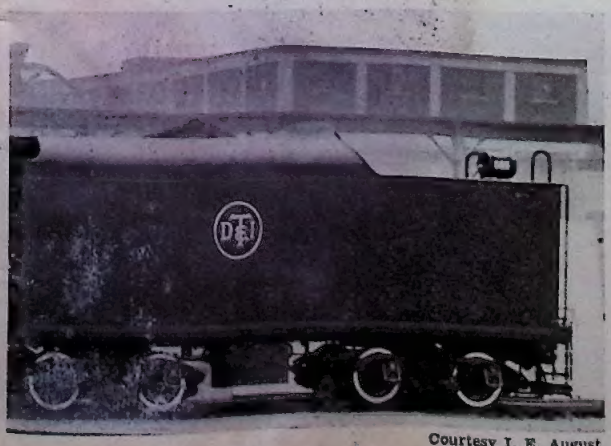
conditions of today 86 per cent of the original heat used to make steam in the boiler remains in the exhaust steam. Truly, here is the place to reclaim heat that would otherwise be wasted, and most feedwater heaters use this source.

Feedwater heaters are of two principal types: the open and the closed. An open-type heater is one where the feedwater is heated in a chamber in direct mixture with the exhaust steam. Injectors fall into this class, but live steam is required to operate the injector, and this same steam preheats the feedwater by condensing and giving heat to it. A later design of injector, known as the

This is the heater.



In this cross section the ball float-valve which controls the steam supply to the cold-water pump is clearly visible. When there is enough cold water, the cold-water pump is shut off. Exhaust steam from the locomotive and the hot-water pump is continuously supplied to the upper part of the heater. Cold water from the tender is sprayed directly into this exhaust steam. The direct contact and mixing transfers assure most of the exhaust-steam heat being returned into the boiler feed.



Courtesy I. E. August.

New DT&I Mike.

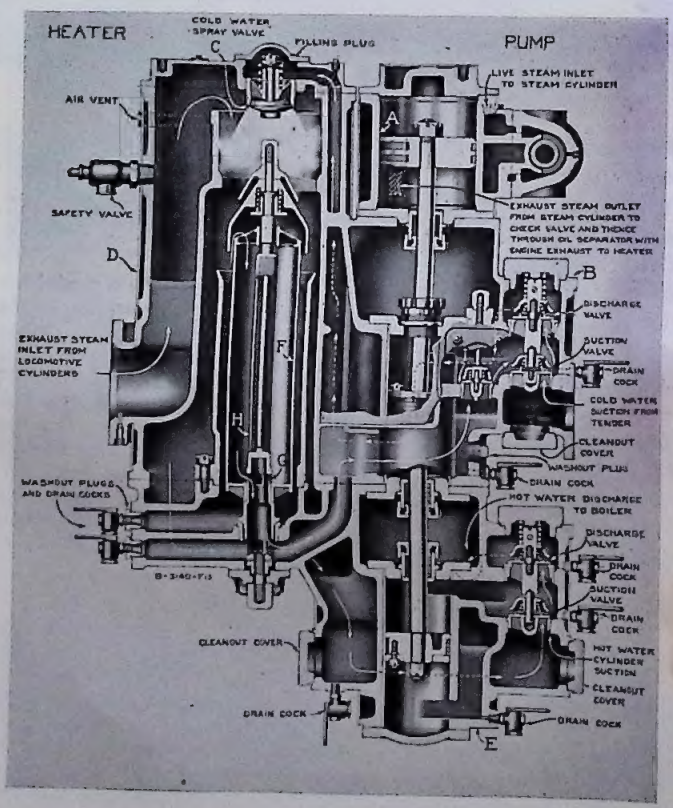
Mikado, or Mike, is the name commonly applied to the 2-8-2 locomotive, a freight-type rarely built any more. For a relatively short connecting road like DT&I the type is more suitable than many of the heavy, faster, newer designs, and four like the 800 were built by Lima in 1940. They are equipped with the Worthington Type SA feedwater heater, and the cold-water pump can be seen just back of and above the trailing truck, the hot-water pump just in front of the air tank, under the running board, and the heater itself sticking out of the smokebox top just in front of the stack. These locomotives carry 260 pounds steam pressure, have 23" x 30" cylinders, 63" drivers, weigh 563,700 pounds with tender, and exert 55,600 pounds tractive effort. Heater capacity is 65,000 pounds per hour.

exhaust-steam type, uses both exhaust and live steam to preheat the feedwater. In both types of injector the heat in the live steam leaving the boiler is returned to it in the feedwater and there is neither loss nor gain in heat. The closed-type heater is so designed that the exhaust steam does not mix directly with the feedwater, the heat being exchanged by passing the feedwater through a net of tubes while the exhaust steam passes around them.

Feedwater heaters are built in a wide variety of sizes ranging in capacity from 20,000 pounds per hour to 135,000 pounds per hour or more, which means that locomotives from the small industrial type to the largest articulated can be equipped. Open-type heaters will consistently heat the feedwater to within 10 degrees of the temperature of the exhaust steam. One definite advantage of the open-type heater is that its original efficiency is not impaired by scale formation in any tubes, as is the case with a closed type. Then, too, an open-type heater will remove at least 80 per cent of the corrosive oxygen from the feedwater, with a still further advantage in that the heater shell is subjected to only exhaust-steam pressure.

The various makes of feedwater heaters are easily identified by the observant railfan. A Worthington Type BL heater is usually mounted on the left side of the engine, the pumps being a part of it. Type SA, a later design, has the heater separated from the pumps and is not so easy to distinguish. All Worthington heaters are of the open type. Elesco makes a closed-type heater and the cylindrical heater shell, usually mounted up on the smoke box, is easy to identify. An exhaust-steam injector, in its way an open-type heater, is also made by Elesco and is usually mounted on the engine frame just below the cab on the right side. Coffin feedwater heaters are of the closed type and are distinguished by the horseshoe-shaped heater shell mounted on the front of the smoke box. In more recent designs the smoke box may hide part or all of the heater shell of Elesco and Coffin heaters. The Wilson heater is enclosed within the tender tank.

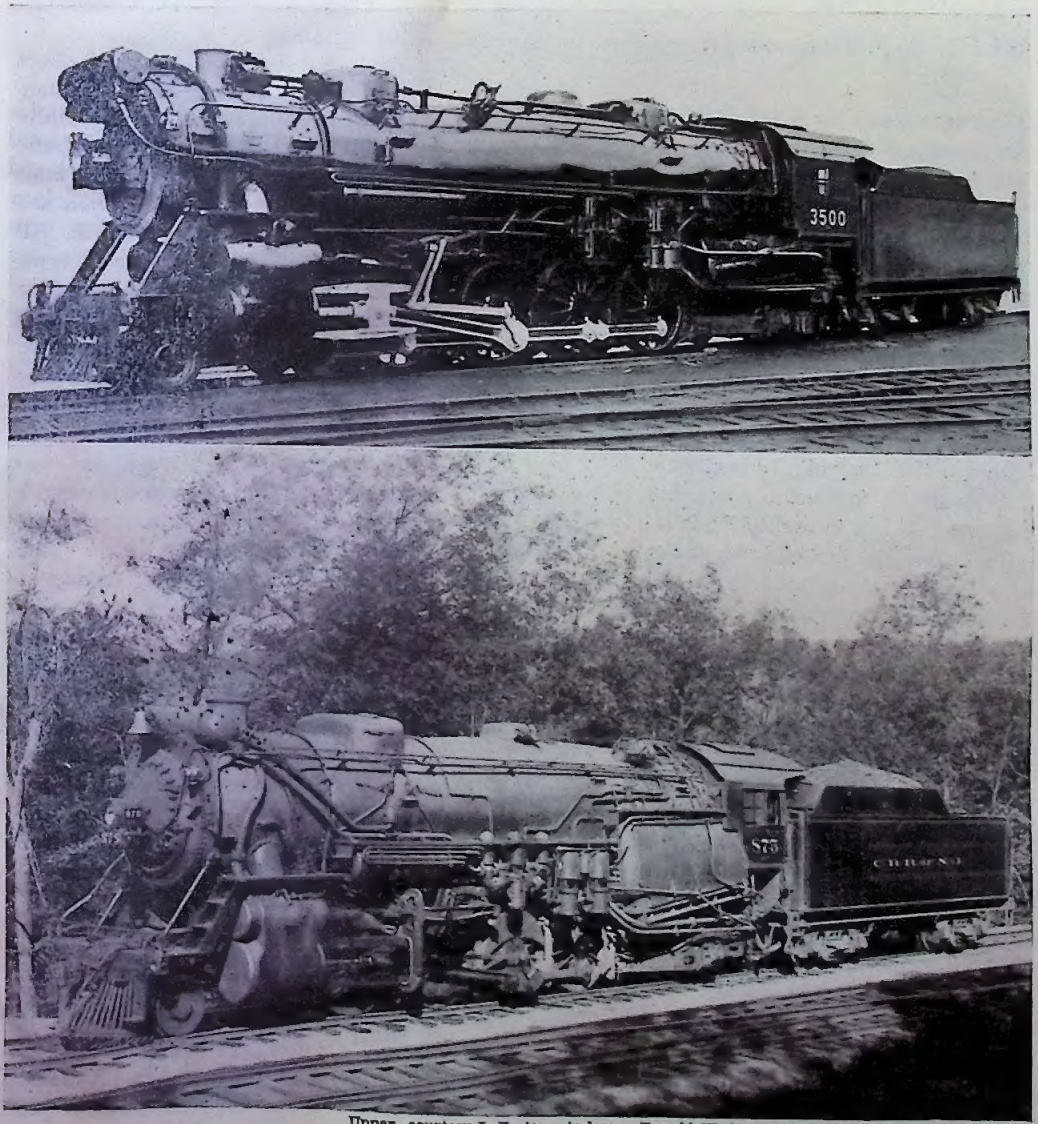
That feedwater heaters have become an accepted integral part of the locomotive of today is explained by the following average results of tests on open-type heaters: 12 per cent of fuel and 14 per



Type BL Worthington heater and pumps.

Here is the whole works under one cover: an open-type feedwater heater and the cold- and hot-water pumps. The water pumps are both driven by the steam cylinder at the upper right corner. The middle cylinder on the right is the cold-water pump, while the bottom cylinder on the right is the hot-water cylinder. The heater, where exhaust steam is mixed with the cold feedwater, is the left-hand half of the apparatus. The cold water from the tender is pumped through spray valve *C* into the steam filling the upper part of the heater. The hot-water pump cylinder is larger than the cold to take care of the condensed steam added to the feedwater before it is forced into the boiler.

cent of water is saved, while the boiler capacity is increased 10 to 13 per cent. This means fewer stops on the road for fuel and water. Removal of 80 to 90 per cent of the corrosive oxygen from the feedwater purifies it, which in turn means less boiler-scale accumulation and less maintenance. Thus feedwater heaters extend the economic life of old engines by increasing both steaming capacity and drawbar pull as well as reducing fuel consumption. Likewise, a more powerful and efficient locomotive can be built within given limitations if a feedwater heater is incorporated into the original design.



Upper, courtesy I. E. August; lower, Donald W. Furler, 65 Glen Ave., Glen Rock, N. J.

Locomotives equipped with Elesco feedwater heaters.

A transverse round tank in front of the smoke stack marks the Elesco feedwater heater. Since the feedwater passes through closed coils surrounded by the exhaust steam, only one pump is needed; this can be either reciprocating or centrifugal. The warm condensate, after serving its purpose in the heater, is piped to the tender, where it mixes with the cold water. The top locomotive is a New Haven Class R-2 Mountain-type freight locomotive, with Southern, one of the less usual types of valve gear. The lower engine is Central Railroad of New Jersey 875, an M-2as Mikado. Elesco also makes an exhaust-steam injector, an open-type feedwater heater.

Pacific Electric

By Frank P. Donovan Jr.

DO NOT think of the Pacific Electric as a company operating city street cars, suburban trolleys, or even high-speed interurbans. Think of it as a *railroad!* Yes, a heavy-duty railroad owning some 2147 freight cars which are freely interchanged with connecting steam lines. A carrier embracing approximately 1000 miles of road—single, double and quadruple track—running mostly on private right of way with relatively short sections on public streets. Technically it is an interurban, the world's largest (and it still hauls an appreciable number of passengers), but in reality PE is gradually assuming the characteristics of an electrified steam road.

The railroad was the greatest factor contributing to the growth of Southern California, and like Southern California itself, this railroad is colorful, romantic and different. It abounds in variety: rails tapping the lower reaches of the Sierra Nevada Mountains on 5 per cent grades; lines meeting the shore of the blue Pacific; still other routes serving semi-tropical orange groves; rough, unpolished oil country; cosmopolitan Hollywood. It once abounded in still more variety: a funicular railway of 3′-6″ gauge, countless local lines in small communities with squat red Birneys or open-ended "California"-type cars, and personally conducted trolley trips which were known from coast to coast. This is Pacific Electric!

To realize the enormity of Pacific Electric

35 miles of sunny coastline once looked like this.

You could stand in a patch of seaweed watching the squealing gulls quarrel over a choice morsel left by last weekend's picnickers. The first sound of a low-pitched whistle up the line would soon be followed by the singing of the trolley wire, and then, like a bat out of Los Angeles, the limited would zip by and only the hoarse whisper of the waves would be left to share your thoughts. This section of the PE was on the Redondo Beach line, now served only by freight equipment, but in its day the holiday trains kept the rails as shiny as their brass brake handles.

★ Its track network covers the Orange Empire; 53 locomotives pull freight and 2189 daily trains carry passengers.

and to get the spirit of its multifold operations, there is no better place to start than the nine-story PE Building and all-rail terminal located at Sixth and Main Streets in the heart of Los Angeles. Erected in 1905 (when Los Angeles was scarcely larger than present-day Yonkers, N. Y.) at a cost of $600,000, this structure was the tallest of its kind in the city, and even today it more than holds its own in the country's fifth largest city. One enters the station from Main Street by going through a lobby past a succession of elevators running up to the many PE and SP offices in the building. Reaching the waiting room our attention is first attracted by the central information booth, where a gray-

William North.

Collection of Ira Swett, 1414 S. Westmoreland Ave., Los Angeles, Calif.

Oneonta Junction.

Here the Pasadena Short Line swings to the left through slip switches while the four-track main continues eastward. The train is an early morning commuters' limited making only junction and other important stops. Locals take the outer tracks for the last few miles before they peel off at their junctions. A busy day is January 1, when thousands of people ride special trains on two-minute headway from all points of the PE to the Tournament of Roses and the Rose Bowl game. A portable substation is located here on that day to boost the trolley voltage.

haired, motherly lady is patiently giving out trolley schedules to a young couple who've "never been West before" and who "want to see everything." Also located in conspicuous places are ticket grilles, a Catalina booth (choice of boat or plane), a Southern Pacific rail and a Greyhound bus counter. Characteristic, too, of the station is the railway newsstand and lunch counter tended by smartly attired young men and women with PE caps and uniforms.

But next to the "big red cars," what is more of a cynosure than the huge trolley map in bas relief, located just inside the trainshed gates? Was it not the late O. P. Van Sweringen, builder of the Cleveland Interurban and a far-flung steam rail empire, who, when asked the names of his favorite authors, tersely replied, "Rand and McNally"? At any rate, the average railfan is likely to sympathize with "Van," especially after seeing the cartographic masterpiece of PE. Moreover, this map formerly showed (much to the delight of trolley enthusiasts and to the chagrin of visitors) rail lines which had been junked a score or more years ago. But now, in the words of one astonished red cap, "They've done gone an' brought that ol' map up to date!"

Going out to the trainshed, one gets the full flavor of the PE scene. Here is a never-never land where the interurban majestically holds sway. Majestically? Yes. Observe that rebuilt 1200—a 50-ton modernized flyer with its streamlined paint job—ready for the 20-mile run to Long Beach. Now look over on Track 3, to the famous *Catalina Special* [temporarily suspended for the duration of the war], six full cars coming from Los

Jack Whitmeyer, 3430 Russell St., Riverside, Calif.

Angeles Harbor. Where in all America can you observe such a train in daily operation, twisting and turning through city streets? As the *Special* climbs the elevated from the highway to the station we see tanned faces of vacationists and hear them sing "I found my love in Avalon . . ." or shout the popular Catalina salutation, "Hi, neighbor!"

Then there are the old wooden 1000's from Santa Ana coming up San Pedro Street. And rumbling along Main Street is the inbound Pasadena Short Line, cars of the all-steel 1100 class which will leave the terminal over the San Pedro Street tracks. Notice the conductor, red flag in hand, leaning out the rear vestibule to warn motorists of the overhang as the two-car train veers into the depot. (The double "through" tracks are located at the extreme right of the PE Building, while the remaining tracks—three in all—are of the stub-end type and are situated at the

rear of the station). Although tickets are sold for all forms of transport—train, plane, boat or bus—none but the interurban electrics are permitted to enter the terminal.

HAVING seen the headquarters of the "world's largest interurban," we are ready to discuss the types of service rendered and the equipment used. Where to start? That is the question on such a comprehensive system with its palpably incongruent forms of traffic. Perhaps by segregating the passengers into three general divisions we can best describe this type of service. To begin with, it must be remembered that Los Angeles covers a vast area where city, suburban, and even a form of interurban operation are featured by PE. Exaggerated but pertinent is the classic cartoon depicting an explorer who, lost in the arctic wilds, runs across an obliterated signpost from which he brushes the snow and reads the legend, "Los Angeles City Limits."

The three passenger divisions can be likened to an equal number of concentric circles. The first sphere, about two miles in diameter, is PE's local 5-cent zone. Here Pacific Electric vies with the 3'-6" gauge Los Angeles Railway, and on certain streets, such as Hill and Main, there are three rails to accommodate both systems. One frequently sees a big red interurban, a box motor or an R. P. O. unit sandwiched between a string of "Lary's" slim-gauge yellow trolleys. Most of the nickel fares come from patrons on the Echo Park - Sierra Vista - Watts local, the Venice Boulevard line, or the two Hollywood routes within the prescribed zone limits. To get an intercompany transfer one is obliged to pay a dime fare.

The second type of service offered is of a suburban-interurban character embracing a larger circle about 15 miles in diameter. Most of the so-called Western Division lines operating out of the $3,500,000 Subway Terminal (located on Hill between Fourth and Fifth Streets)—a more modern but less colorful structure than the Main Street Station—are in this category. The Subway Terminal, by

Main line of the interurban.

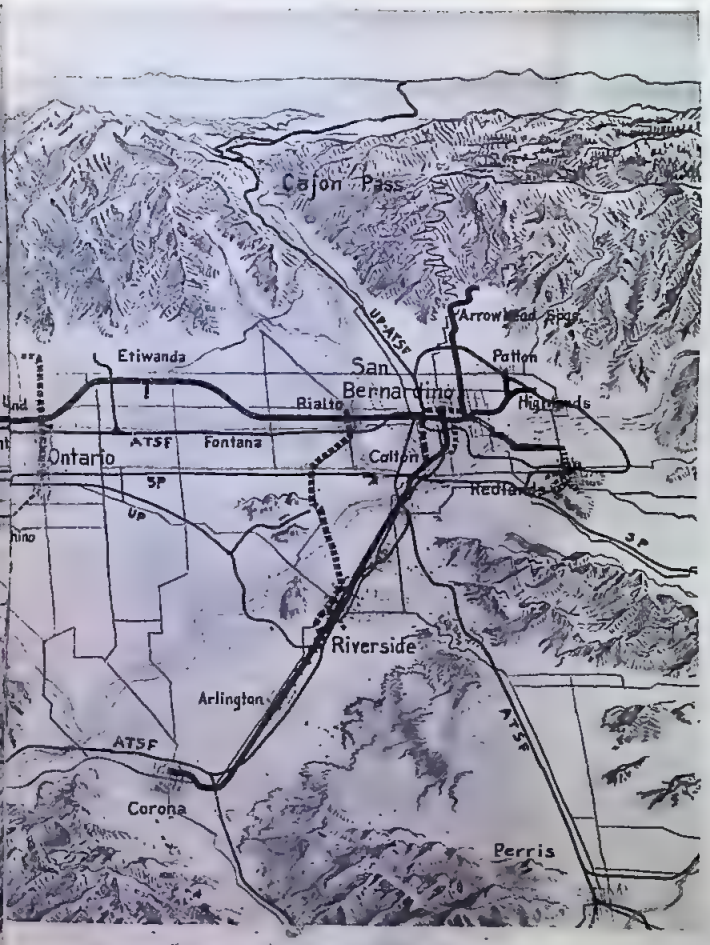
East of Los Angeles, along the four-track main line (far side, below) to Pasadena and Glendora, are car houses (left background) and yards (foreground). The four tracks are here operated as two separate double-track lines. The cars in the foreground are made up for Sierra Madre rush-hour service. Notice the posters on the sides of the cars, a typical PE feature. The trestle at left is on the main line near San Bernardino, where PE crosses over Santa Fe freight tracks.

Linn H. Westcott.

The reaches of Los Angeles.

A. D. 1700, barely known; 1800, a handful of Spanish land-grant ranchos; 1900, vacant lots surround a modest town; 1930, Los Angeles covers more ground than any other city in the world. This region is a cluster of dry valleys connected by low passes and river washes, supporting vegetation best when irrigated. Retired farmers and ministers from Iowa, fruit growers, amateur oil-land and real-estate speculators, and waitresses who didn't make Hollywood now ride the "big red cars" which built their new homeland. To the right in the map above are the San Bernardino and Riverside districts; lower center, Orange County; upper center, San Gabriel Valley; lower left, Los Angeles Harbor district, left center, Los Angeles, Hollywood (not a separate city), and the "Beaches"; upper left, San Fernando Valley.

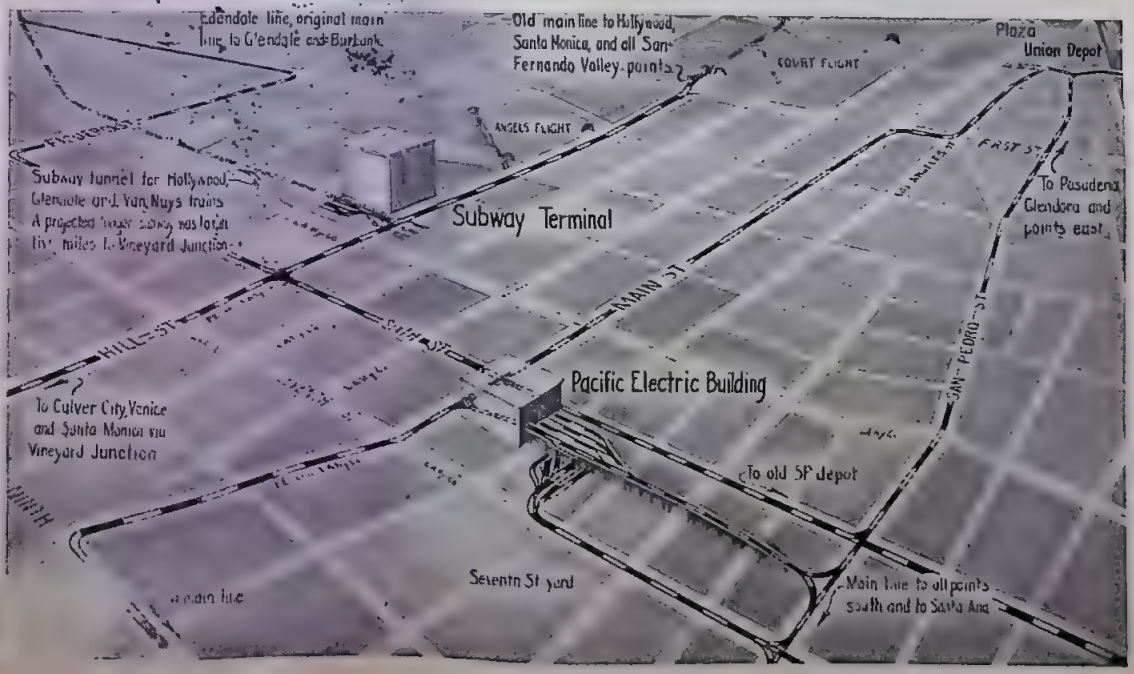
the way, was constructed to take most of the Western Division cars from Hill Street and to stabilize the central business district. It is a 12-story structure, of which the ground floor is chiefly devoted to rail patrons, the remainder a general office building. The usual complement of ticket grilles, information and lunch counters—all made of marble—have a brisk down-to-business appearance such as one finds in New York's Grand Central Terminal. Too, the smart shops flanking the entrance and a large clock directly over the doorway give it a sophisticated Fifth Avenue atmosphere. Completing our Manhattan analogy, one is obliged to go through turnstiles



PE's two terminals.

A union terminal was never built, since little traffic passed through the city. This is the downtown district, somewhat larger in area than the Loop of Chicago. Old town site is the plaza, upper right.

Maps by Linn H. Westcott from data by courtesy of the Security First National Bank, Los Angeles, and the Automobile Club of Southern California.


Eagle Rock line, original main line to Glendale and Burbank
Old main line to Hollywood, Santa Monica, and all San Fernando Valley points
COURT FLIGHT
Plaza Union Depot
ANGELS FLIGHT
FIRST ST
Subway tunnel for Hollywood, Glendale and Van Nuys trains
A projected tunnel was to run five miles to Vineyard Junction
Subway Terminal
To Pasadena, Glendora and points east
MAIN ST
HILL ST
SOUTH ST
Pacific Electric Building
SAN PEDRO ST
To Culver City, Venice and Santa Monica via Vineyard Junction
To old SP depot
Seventh St yard
Main line to all points south and to Santa Ana

Linn H. Westcott.

The elevated terminal, stronghold of the interurban.

More passengers and more cars pass through the Main Street Terminal of Pacific Electric than through any other interurban station in America. Even today the Pacific Electric Building (background, opposite page), Los Angeles' first skyscraper, dominates the skyline. The track-level view (above) looks out along the elevated lead which carries trains clear of the downtown traffic and then descends to street level. The photo below shows the car yard beneath the elevated terminal. Part of this was an old street-level interurban terminal. Notice the real estate slogan on electric sign in background.

Linn H. Westcott.

William North.

before descending the ramps to the subway tracks, facilities which are taxed to capacity during the morning and evening rush hours. A surviving remnant of former days is the surface terminal adjacent to and south of the Subway Building proper. From here, on stub tracks, interurbans depart for the coastal towns of Venice, Ocean Park and Santa Monica. On the other hand, cars for points on the San Fernando run (to Van Nuys) and on the ultra-modern Glendale-Burbank route go directly into the Subway Terminal.

Finally there is the Simon-pure interurban service which roughly falls between the 15-mile area and a 57-mile circle. Included in this scope are the Southern Division lines, to San Pedro, Long Beach and Santa Ana, operating from the Main Street Station. Of still greater mileage is the Northern Division leaving the same terminal. In the latter division are, or were, the 57-mile San Bernardino run, the Glendora line, the shorter Sierra Madre and Temple City lines, and the two routes to Pasadena.

In actual practice the urban-suburban-interurban services are so overlapping one cannot segregate each type. Nor can we sharply define the areas served (for example, the Pasadena cars remain within the 15-mile limit, yet they are avowedly interurban), but for the sake of clarity and simplicity we have employed arbitrary divisions. Then, too, there are runs not operated out of Los Angeles, such as the short San Pedro-Long Beach interurban, the city line in San Bernardino, and—strangest of all—the isolated Riverside-to-Arlington local.

Pacific Electric passengers are as varied as the Southland's towns and villages, and are usually just as interesting. On PE's 500-odd passenger cars we see America: people from 48 states and occasionally a native-born Californian. Riding the smart, well appointed P. C. C.'s along Hollywood Boulevard, one observes meticulously groomed gentlemen and trim, fine-figured ladies of movieland. How often Clark Gable or Bette Davis use the "big red cars" is open to question, but many a now-famous screen star once rode PE. Or it may be a rural family from Azusa (everything from A to Z in the U. S. A.) going to Los Angeles for a day's shopping on the sturdy but slow 1100's. Again, we may see a group of shipyard workers boarding the all-steel 1200's to go back to San Pedro and get that "dollar and 12 cents an hour, time-and-a-half for overtime—but we have to work like hell." Then there's the elderly couple, a Midwestern farmer and his wife, bound for Long Beach, often called Iowa-by-the-Sea because its populace is largely composed of retired husbandmen from the Hawkeye State. As the aged gentleman reaches for the grab rail of number 1372, an

Upper, Burt B. Starr, 10833 Charnock Rd., Palms, Calif.; lower, Jack Whitmeyer.

Freight by the trainload.

If the typical interurban perished because it could not haul either passengers or freight by the trainload, Pacific Electric should stay. The freight train (top) is one of many running over not only the passenger tracks, but over many freight-only lines. The switching crew is at San Bernardino.

Both, Jack Whitmeyer.

ex-Portland, Eugene & Eastern steel job (easily identified by the porthole-like windows at the ends of the car), you can see on his hands the callouses of arduous toil. By frugal living he has saved up enough money to spend his remaining years in the mild-all-year temperature of California's Southland.

THERE'S atmosphere, personality and human appeal in the "varnish," but the money—and this is all-important in view of PE's declining rail passenger traffic—is in dull red box cars and yellow reefers. The heavy cargo marshaled together by a Santa Monica Air Line switcher, the strings of tank cars from El Segundo, or the fruit and produce in the way-freights from San Bernardino: these keep down the "red" on Pacific Electric. Today, in a period of national emergency, all of the company's 2147 freight cars, its 46 electric locomotives, 34 box motors, five steam hogs and two gas-electric switchers are kept constantly on the move.

It's not an uncommon sight to see 40-car freights rumbling along the heavy-duty four-tracked main line from Watts to the Butte Street Yard. Trains up to 70 cars have been highballed over the system with an electric jack at the head end and a pusher behind the caboose. Much of the tonnage is of high-grade, maximum-revenue character —foodstuff, to be moved with dispatch. It may be several Pacific Fruit Express refrigerator cars from the old Quaker community of Whittier or from the pretty little town of Fullerton (there's a small ice plant and loading dock along the tracks just outside the business area), or possibly trainloads of bananas from the wharves at Long Beach, where a South American vessel has just berthed. Too, it could be fresh-hewn lumber from the port of Wilmington, or less lucrative quarry products from the rock-crushing plants in the San Gabriel Valley.

Industries like the Standard Oil at El Segundo, the Union Oil at Wilmington, the Richfield Oil and Shell companies at Watson, are a fruitful source of revenue. Other plants

Stepchildren on Pacific Electric.

Locomotive 1591, pushing the water cars up to Arrowhead Hot Springs, was originally built for a Cuban plantation, but stayed at Baldwin until purchased by Southern Pacific for PE. The package car transferring freight to an SP truck was formerly on the SP's electric lines at Portland, Ore.

especially important because of defense needs are the Goodyear Tire Company (Wingfoot Station), the Columbia Steel Works at Torrance, Bethlehem Steel in Huntington Park, and the ever-expanding Douglas Aircraft factory at Santa Monica; all these greatly augment the interurban's freight traffic.

At the outset of this article we intimated that PE is rapidly losing its early heritage as a passenger-carrying trolley line and is slowly evolving into a commercial railroad whose revenue is computed in ton- instead of passenger-miles. The mere fact that the Whittier-Fullerton-Yorba Linda line, the scenic coastal route from Long Beach to Newport, and a handful of lines south and west of Los Angeles to El Segundo, San Pedro (via Gardena), Ocean Park and Inglewood—have "gone freight," is significant. To further vindicate this statement, the huge freight station at Seventh and Alameda, the still larger yards on Macy Street, the constantly used Butte interchange tracks with the SP, UP and Santa Fe, plus sidings, spurs, switches, everywhere proclaim the importance of freight. The busy Torrance Shops, employing 300 men, take great pride in pruning a P. C. C., yet their chief function is to doctor ailing box cars and mend injured gondolas.

Although PE repairs all its equipment and builds some of its cars and locomotives, the company, in common with most electrically operated railways, does not generate its own power. This important item, supplied by the Southern California Edison Company, is distributed over the system by some 300 miles of 15,000-volt, three-phase, 50-cycle transmission lines. It is stepped down to the standard 600-volt D. C. trolley by automatic, manual, or portable substations. On the San Bernardino run east of Valley Junction, however, a 1200-volt overhead current is used—the only portion of the system employing other than the customary 600 volts. Many of the main lines have catenary construction, and on four-tracked areas huge girders span the right of way, holding the trolley wires firmly. The roadbed and track, like the overhead, are designed for heavy-duty railroading after the manner of a steam road. Stone ballast and 90-pound rails make for speed and tonnage on the more important routes. Other portions of the system use lighter rail with gravel or dirt ballast, but in paved streets the 128-pound girder is widely employed. Incidentally, much of the Pacific Electric iron on secondary lines is made up of hand-me-downs from the main stem of the Southern Pacific.

Another item which heightens PE's steam-road complexion is the fact that it is Southern Pacific-controlled and Southern Pacific-operated. Most of the key interurban executives are Espee men. In fact, ever since the time of the Great Merger (discussed elsewhere in this article), PE has been under the watchful eye of Southern Pacific. Even in the salad days of the old Huntington regime, a *soupcon* of steam-rail administration was part and parcel of the interurban's make-up.

This overlordship of the Espee has probably been highly salutary to the development of Pacific Electric, even though it meant the interurban had to relinquish a certain

Dining car strategy.

The chef of a Western Pacific diner plans his meals for the day, and before the first breakfast order is given he has luncheon and dinner menus well along in the process of preparation. In the dining car proper five waiters lay the table with fresh linen, silver and glasses, fill the water bottles, and give the car that spick and span look. As the passengers entrain at a station, the dining car crew watches them, and not from mere curiosity, either. From long years on the same run the dining car crew studies the taste of the traveler, so that before the dinner call is sounded your own pet dish is often already on the fire, ordered by a waiter who has served you before. Early on the run a check-up is made of through passengers so that the chef may know the probable number of meals he has to prepare.—Western Pacific *Headlight*.

amount of local autonomy. It means, too, that every important move must have "the approval of San Francisco" (the executive headquarters of SP). Yet, when one considers that the road of "Comfort, Speed, Safety" goes in the red to the extent of over two million yearly and that SP makes up the deficit and provides funds for betterments, a friend in need is a friend indeed.

The present rehabilitation program of PE is being carried out on a five-million-dollar advancement made by Southern Pacific. The steam road said, in effect, "Here is five million in advance. Do whatever you want with it, but don't come back for more."

The truth is that as a separate entity the interurban is run at a dead loss, but when taken as an integral part of the Southern Pacific it is an extremely valuable feeder. Viewed from this angle, the electric line is probably meeting its out-of-pocket cost of operation, though it can in no wise be looked upon as highly remunerative. But if the parent company were to repudiate its control there's no telling to what camp the step-child might go. No, the steam road is well aware of the fact that the interurban is a valuable adjunct capable of moving vast amounts of

Historical collection, Security First National Bank of Los Angeles.

Henry Edwards Huntington.

The nephew of Collis P. Huntington of Southern Pacific fame consolidated electric lines to form the network of Pacific Electric, which played such a large part in the huge real estate development of Los Angeles.

Linn H. Westcott.

Huntington Drive.

PE has two sections of four-track main line like this on the Pasadena and Glendora lines. Long before auto competition became heavy, Huntington built many double drives with protected right of way down the center.

tonnage, and it is all-important to see that such movements are in the interest of SP.

Again to round out PE's similarity to a steam road, we may point to its trainmen—all under the aegis of the B. R. T. Whether it is a hogger of a Baldwin Mike on the non-electrified sidings at Wilmington, the engineer of a juice locomotive on the Wingfoot Branch, or the motorman-conductor of the Toonerville-like Riverside-Arlington local, they all wear Brotherhood of Railway Trainmen's buttons—a labor union essentially for steam rail employees.

Also characteristic of a well managed trunk line is PE's solicitude for its workers. This is exemplified in the new four-story Pacific Electric Club adjacent to the Main Street Terminal. Here the company provides a recreation center for virtually all its employees. They may see a dramatic production in the little theatre on the ground floor; sup in the cafeteria or rest in the trainmen's quarters on the second; play billiards, withdraw a book from the 3500-volume library and read it in one of the easy chairs in the lounge on the third; and meet their wives or girl friends in the ladies' section for a waltz in the spacious ballroom situated on the top floor. Another popular meeting place is the PE Rod and Gun Club trophy room abutting the main lounge. Railroaders, particularly the older trainmen, are avid sportsmen who like nothing better than to spend their vacations fishing at the company's Lake Arrowhead camp.

To further the *esprit de corps* of the traction family, the company issues the *Pacific Electric Magazine*, a well ordered publication, readable, attractive, timely—one of the few remaining interurban periodicals currently published in the United States.

We have stressed the points which PE has in common with a typical Class 1 railroad and we're not recanting, but at the same time one thing stands out pre-eminent: There was, is, and will be only *one* Pacific Electric. If there was ever a carrier which is highly individualistic, it is PE. Give it a block or two more of elevated structure, rebuild the narrow gauge cable road up Mount Lowe, and you will have just about every kind of railroad operated on God's earth.

PE is unique!

A 2½-mile isolated trackage for freight running between Marlboro and Orange; an-

other disconnected unit some two miles long up in San Fernando Valley. An industrial branch (the steam portion of Wingfoot) operated six months by PE, six months by Santa Fe.

PE is diversified!

Two heavy-duty four-tracked main lines, the one running from central Los Angeles directly south to Watts, the other extending from near Valley Junction to El Molino. A weed-covered freight route from Santa Ana to Dyer and Greenville so rarely used that a Railroad Boosters special was obliged to make several emergency stops to free cows and goats which farmers had tied to the rails. A mile-long double-track tunnel-subway where trains enter the Hill Street Terminal every two minutes during the rush hour.

PE is different!

Motive power and rolling stock which run the gamut from local corner-to-corner street car service to main line double-headed freight operation. Electric locomotives, steam yard-engines, gas-electric switchers; photogenic P. C. C.'s (the only interurban cars of President's Conference Committee specifications on rails); lack-luster reconverted-box-car cabooses, water tankers (exclusively used to ship the mineral waters of Arrowhead Hot Springs down the 5.3 per cent mountain grade to thirsty city folk); and high-speed electrics fitted with quaint, old-fashioned fenders of the horse-and-buggy era because of some archaic metropolitan ordinance. Continuing, one might mention the Railway Post Office units, the ubiquitous trolley freight motors sometimes lined up four deep on the express tracks in Union Station, and the holy of holies, No. 1299, President O. A. Smith's swanky private car.

IF THERE is any run which may be said to be typical of Pacific Electric-built lines, it is the 57-mile interurban to San Bernardino (called San Berdoo by Southlanders), the longest on the system. One reason why the Berdoo line is so representative of the company is its length—the greater the mileage the greater the likelihood of variety in scenery and diversity of operation. Mile posts go by with clock-like regularity, but it is axiomatic of California that there's little, if any, monotony between them. However, there's nothing like on-the-line experience, so let's go over the road and see for ourselves. Since passenger service was abandoned on this line east of Covina, Nov. 1, 1941, it will be more of a memory trip, interesting nonetheless.

Boarding the ponderous 1216 at Main Street Terminal, we relax in the comfortable air-foam seats and await the highball. It comes! We're rolling down the incline, past colorful electric signals on an elevated gravel-ballasted roadbed. When we reach ground, after about four blocks, we turn north onto San Pedro Street to Aliso, thence east past the new Spanish-styled Union Station, and on to our private right of way. Observe how smoothly the all-steel job is eased around the Macy Street shoo-fly (a temporary gauntlet track shared with narrow gauge "Lary" until the Aliso Viaduct is rebuilt) and back on the main. Clicking by the motley array of cars surrounding the Macy car house, we're off for the open road—over 50 miles of well-tended right of way. Echandia Junction (see No. 101, a modern St. Louis-built street car ready for its 1000-foot run to the General Hospital) flits by as the rebuild is given her head. Valley Junction . . . here's the beginning of high-tension railroading, a 1200-volt line clear through to Berdoo and not a little of it catenary construction. Our car will do 70—in fact, it's going—*uh, oh*—too bad, we're due for a slowdown. It comes outside of El Monte, where the big rebuild gets ready to stop at the dull-gray station. But this is only a momentary pause, for, shortly after leaving El Monte, most traces of suburban towns disappear and we "go interurban." East of Covina we proceed along a single-track staff-operated section to Lone Hill, near San Dimas Junction, where the interurban uses the Southern Pacific's high iron as far as La Verne. We've made most of the run protected by block signals, some seven miles by the more primitive staff system, and now the remainder of the trip—east of La Verne—will be governed by train order. Here and there are white and gray-blue quarters of Mexican trackmen, built after the manner of transcontinental railroads. Now the motorman is wheeling along at a good clip past beautiful ranch homes, groves of oranges, and vast fields of grapevines. The Guasti Vineyard, covering 5000 acres between Etiwanda and Fontana, is said to be the largest in the world. Finally we rumble along the tree-lined streets of San Bernardino, arriving "on the advertised."

We have looked at PE's longest line—now let's look at the shortest. This is the 1000-foot Echandia Junction-General Hospital shuttle, and fascinating it is—not only because it is uniquely short but also because it is a link with the past that bids us delve into history for a glance at the development of this great web of lines that is PE, this lattice on whose sturdy frame the plant that is Southern California leaned and grew and flourished. For the Echandia Junction-General Hospital shuttle is the one remaining segment of the original electric interurban to Pasadena, once was an integral part of that line, the Los Angeles & Pasadena Railway, incorporated in 1894 and opened for traffic the following year. Operated by Moses H. Sherman and Eli P. Clark, this pioneer interurban was a merger of the Pasadena Traction Company and the Los Angeles-Pasadena Railway. It was the first through electric line connecting the two cities.

HERE, then, we may well begin our tracing of PE's development, for on foundation stones such as this was its structure to be built. In the same year that saw their Los Angeles & Pasadena line in operation—1895—these early traction *entrepreneurs* provided another "prelude to Pacific Electric" when they started construction of what was to become the famous "balloon route," an oval-shaped line between Hollywood and Santa Monica using the rails of the old steam-operated Los Angeles County Railroad. The latter road (now part of the Santa Monica Boulevard line) was promptly electrified and became the Los Angeles-Pacific. One by one Messrs. Sherman and Clark built or purchased traction lines until they had trolleys running to Venice (the Venice Short Line), to Redondo Beach via Playa del Rey, and to many intermediate points. The zeal with which the partners added beach lines to their system caused the property to be dubbed "Sherman's March to the Sea."

But no march of destruction was this Sherman's trek to the ocean, for the passengers who rode the LA-P made prospering resorts out of simple beachside communities. Santa Monica, Ocean Park, Venice, Playa del Rey, El Segundo, and Manhattan, Hermosa and Redondo Beaches became a vast "Riviera" for *Angelenos* (residents of Los Angeles) in search of relaxation and diversion. Especially anxious to provide some of that profitable diversion was one Abbott Kinney, who strove to make Venice a counterpart of its Italian namesake and managed to realize his desire to the extent of canals, cement arch bridges, gondolas and gondoliers. Doubtful, perhaps, of the plan's financial value, LA-P cast a benevolent glance at the project but offered little monetary aid. Mr. Kinney's Venice-of-America, however, soon appreciated the influx of vacationers of moderate means now enabled by LA-P to travel to the beaches for their recreation. And, like the leaky hose that nourishes the ground at intervals all along its length while carrying the main stream to its nozzle, LA-P found itself contributing to the growth of communities all along the routes of its beach lines. Not the least of these was Hollywood, then a struggling little town unaware of its destiny, thankful for much-needed transportation facilities on which it thrived and grew. By 1910, the Los Angeles-Pacific was a comprehensive road owning 215 miles of track, one of the largest in the Southland.

A never-realized dream of E. H. Harriman (in 1908 his Southern Pacific bought a controlling interest in LA-P) was the construction of a four-tracked subway from central

Coming next month.

"Railroads at the Front." In spite of trucks and planes, the railroad still has a vital part in war.

"The Unbeatable Class H." Thumbnail sketch of the C&NW's 4-8-4's.

"Cripple Creek." Railroad guide to the Colorado mining center.

"The Maine Two-Footers." Photos and facts about the narrow gauges of Maine.

"Twentieth Century." The story of the train that has grossed more than 150 million dollars in 40 years.

and other features.

The car that built PE.

The 130 cars like the 257 operated over every interurban line except the San Bernardino run. They were characteristic of the old Huntington regime—high-speed, heavy, California-type units. Converted to M. U. operation and renumbered (800-929), they were in service until the Spring of 1941. Presidential special car 1299 is identical in size and electrical equipment with the rest of the 1200 series, characteristic of the later steel car days. The streamlined cars, shown on a trestle on the Glendale-Burbank line, are the only P. C. C.'s ever built for multiple-unit, double-end operation, and replaced buses on this line. The 30 cars like this furnish base service out of the subway terminal.

Upper, Ira Swett collection; lower, *Wheel Clicks*, 508 Pacific Electric Bldg., Los Angeles

Los Angeles to the suburban junction point of Vineyard, south of Hollywood, thus to remove all surface tracks and overhead wires from view and to speed service to the outlying districts. This was not to be, but a happily realized dream does stand today in his modern Hill Street Subway Terminal, previously described.

Of interest as an independent beach line was the Los Angeles & Redondo Railway. No finer site for a natural harbor existed anywhere on the coast from San Diego to San Francisco than at Redondo Beach, and the building of a $175,000 port with three great wharves for freight and passengers made it (from 1904 to 1912) a port of call for virtually every important ocean-going vessel plying these coastal waters. Ready for, and contributing to, this prosperity was the narrow gauge LA&R, built in 1890 and electrified in 1902. But, like a Snow White in the big, bad forest, the LA&R was surrounded by properties of the Pacific Electric Land Company, a project of ace railroader H. E. Huntington (about whom more later), who managed to gain control of the road in 1908. Able to finance public recreational facilities, Huntington soon had his holdings benefiting one another. Within a year the railroad was broadened to full-gauge; the world's largest indoor salt-water plunge was built. A tremendous dance hall drew other crowds and Redondo fast became a great amusement center. And none too soon, for a new harbor was developed at San Pedro, farther down the coast, in 1914, and Redondo's proud port fell into disuse by 1926. In the new business of delivering pleasure-seekers the Los Angeles & Redondo acquitted itself nobly, and in the Great Merger of 1911 it became an important part of PE.

While partners Sherman and Clark were busy developing the area west of Los Angeles, traction mergers were popping in the south and east sections of the city and suburbs. Under the tutelage of Collis P. Huntington, head of the Southern Pacific, nephew Henry Edwards Huntington was rapidly becoming an ace railroader. During his trips to Southern California in the interest of the SP, Henry became so impressed with the balmy Los Angeles climate that he decided to make "L. A." his home and strike out for himself. By 1902 he had incorporated the Pacific Electric, which, curiously enough, boasted Sherman and Clark's pioneer interurban, the Los Angeles & Pasadena (the partners having lost control before the turn of the century), as its number one property, using money left him by his uncle. To this was added the Pas-

Pacific Electric.

adena & Mount Lowe Railway and other smaller units. The following year he completed the important branch to Long Beach and built the Pasadena Short Line. Extensions to Alhambra, Monrovia, Glendale, Whittier, Santa Ana, Wilmington, San Pedro and Huntington Beach upped the trackage to 448 miles (including the PE-controlled Los Angeles Interurban) by 1906.

Thus was the "era" 1902-1907 a golden one for PE, its period of greatest expansion. Nor could the times have been more propitious, for, at the close of the Spanish-American War, Southern California had entered upon a rampant prosperity in whose profitable soil Huntington's many ventures mushroomed. Where other rail lines made greater the development of neighboring real estate and in turn were benefited, Huntington guided all this reciprocal prosperity into his own coffers by the simple expedient of holding title to both the real estate *and* the transportation. His fool-proof formula was to buy a tract of land, using his Pacific Electric Land Co. for the purpose, then extend an interurban through it. If the line itself didn't pay, this lack of profit was offset by the enhancement in value of the real estate, whose desirability as territory "on a trolley line" was thoroughly drummed into the public consciousness by blatant newspaper ads. A live-wire publicity department created interest in and enthusiasm for the attractions of the coastal area from San Pedro south through Long, Huntington and Newport beaches to Balboa. Mock wars held by the U. S. Army at Long Beach drew crowds of onlookers who had read the invitational advertisements of the traction company and hopped the "big red cars" that were quickly becoming a landmark of Southern California. So Huntington's PE nourished the growing communities about Los Angeles as well as the city proper, his Land Company having a golden finger in the lush pies of the seaside towns, his traction company serving other areas as well.

EVEN as another golden era begat Diamond Jim Brady, symbol of the gaudy, tinseled '90's, so the years of PE's rapid early growth

The bread and butter of PE.

Eager for suburban passenger business, the growing PE networked the Los Angeles district with track, and now even the lines where passenger traffic has been irrevocably lost carry a substantial freight service. Considered as a switching and connecting road, PE gives the most intensive area coverage in the United States. The ubiquitous steeple-cab locomotives are sometimes on private right of way, as here on the Santa Monica air line, or sometimes in the middle of the street, pushing cars into private sidings and warehouses in the early morning.

produced the *Alabama,* colorful character of wood and steel—Henry E. Huntington's private railway car. Product of imaginative engineering genius stirred by Huntington's expressed desire for the unusual and impressive as well as the utilitarian, this gargantuan vehicle emerged from the St. Louis Car Company's shops in June, 1905, a luxurious giant of the rails whose flashing green body, gold-lettered *Alabama,* was for six years of actual service to evoke open-mouthed wonder throughout the country. Heavy, strong, she could be steam-drawn on any rail line from coast to coast, then quickly converted upon reaching Pacific Electric's own lines by replacing the pinions and raising the trolley. Then, while the "big red cars" stood meekly aside, the bigger green car sped importantly from point to point, carrying "the old man" now on an inspection tour, now on a business trip, now downtown to his offices, now to his Bolsa Chica shooting box for a bit of recreation, and usually at day's end to the private siding on Huntington's San Marino estate that was home.

In mechanical construction as well as in appearance and luxury of fittings, the *Alabama* was the B-19 of the early 1900's. Steel, only then coming into general use for railway car construction, was lavished on her 63′-1″ length, 9′-6″ width and 9′-11″ height (from bottom framing to roof). The resultant body of wood and steel was of unsurpassed strength for its day. To propel her loaded weight of 103,000 pounds the *Alabama* was given four 200-horsepower Westinghouse 86-A motors for a total of 800 horsepower, the highest power-to-weight ratio ever built into an interurban car. Little wonder, then, that her record of 20 miles in 15 minutes, an average speed of 80 miles per hour, over cleared lines of PE's Los Angeles–Long Beach run has never been equaled. Theoretical top speed of this chunk of green lightning was at least 120 miles per hour—her gear ratio was almost a direct 1:1 (actually 40:42), and her wheels were 36-inch—but lack of sufficient resistance steps cut this possible speed to a realized 90 or 100. Current feeding too fast to the motors would invariably blow out the line breaker, and so for want of that extra resistance—about 15 steps—or the not then widely used series-parallel switch, the *Alabama* was unable to hit its otherwise possible maximum. But the half-dozen men who climbed aboard at 2 a. m. that moonlit morning and found themselves in Long Beach a quarter-hour later could scarcely have complained.

Pacific Electri

Nor could they have ridden in greater luxury, for here was indeed a palace on wheels. In the ample dining room at one end of the car 10 guests could be served at the richly inlaid extension table, could lift their eyes to the carved and figured walls of African mahogany all about them, feel the cheery warmth from the fireplace midway along one wall, or, fork poised, gaze out the oversize windows at the hurrying landscape. Meal over, they might well cast a last look at the motorman's cab in the left front corner, where the guardian of their safety kept a steady hand on the controls, then make their way past the kitchen and the two comfortable staterooms where they would later wash with running hot and cold water and sleep in luxurious double beds, to the lounge at the opposite end. Here again were figured mahogany, large side windows with silk shades, a sofa and chairs grouped before the two end windows. Small wonder that in Washington, D. C., where the *Alabama* was taken for exhibition at the International Railroad Congress soon after its completion, sophisticated noses were pressed against its windows and wide-eyed *ohs* and *ahs* uttered at the sight of its Taj Mahal interior.

The five years from its birth in 1905 until the sale of Huntington's PE holdings to Southern Pacific in 1910 were the *Alabama's* days of glory. Stored in Los Angeles from that period on, too large for standard passenger use, she was shunted to a specially built

Ira Swett collection.

Reminiscent of yesteryear.

Here is No. 1028 ready to show visitors the "scenic sunny Southland" on an all-day personally conducted Orange Empire Trolley Trip, redolent of the trolley-riding era that is no more.

shelter on Huntington's San Marino estate after the PE shops, where her hulk had stood, were moved to Torrance in 1919. Two years later came an offer from the Sacramento Northern, which had need for a large car to be put in service on a 176-mile Oakland-Chico run operated jointly with the San Francisco-Sacramento Railroad Company. So, minus her powerful motors, control equipment, trolleys and gears, which the PE removed and kept (later incorporated into locomotive 1599), the *Alabama* traveled north attached to a freight drag. There she was remodeled and soon after entered upon another span of useful life with the public this time on the inside looking out.

Well liked and famous once more, the great car must again have been happy in its steel-and-wood heart. But on March 22, 1931, suddenly came the end. South of Sacramento, Fate overtook the car on its regular run and struck it down in an inferno of flames that left only a seared and twisted skeleton. A short circuit had written *finis* to the life of an extraordinary character of the rails.

As MENTIONED before, Huntington in 1910 sold his interest in PE to the Southern Pacific, which interest the latter still retains. During his later years he married Collis P. Huntington's widow and partially retired on his estate. Here he collected rare books and built up an exquisite art gallery with the same genius and application he had previously shown in acquiring real estate and constructing trolley lines. The vastness of his interests is brought out in the following anecdote: A little boy and his father left the Huntington Hotel, boarded a Huntington interurban car, and traveled down Huntington Drive through Huntington Park, and as they reached the shore at Huntington Beach the youngster looked at the ocean and, turning to his father with a quizzical expression, asked, "Does Mr. Huntington own that, too?"

The year following Huntington's sale of PE holdings will be remembered by veteran car-riding *Angelenos* as the period of the Great Merger. During that year 63 electric lines were united to form the present Pacific Electric Railway. Among the larger properties included in the consolidation were the old Pacific Electric, the Los Angeles-Pacific, the San Bernardino Interurban, the San Bernardino Valley Traction, the Los Angeles & Redondo, the Los Angeles Interurban, the Riverside & Arlington, and the Redlands Central Railway. The resultant pooling of rolling stock made PE a melting pot of Western interurban equipment. With the completion of the interurban to San Bernardino in 1914, the PE, as far as mileage was concerned, had become of age. Since that date only the short La Habra-Fullerton segment, the scenic Arlington-to-Corona route, a few short freight lines and the three-mile passenger extension from San Gabriel to Temple City have been built.

Like most interurbans, PE had any number of "paper" lines—projected but never built. Among these were roseate plans for a Los Angeles-to-San Francisco high-speed road (not directly associated with Pacific Electric yet identified with Huntington) via Bakersfield and Fresno. To serve this line a super-interurban car was designed but never built. Other visionary plans included a four-track loop from Los Angeles through Whittier, Yorba Linda and Corona to San Bernardino and back to Los Angeles via Covina; from this line a two-track branch would diverge at La Habra and proceed to San Diego via Fullerton and Santa Ana. Still other interurbans "soon to be built" were extensions to Santa Barbara by way of San Fernando and to Ventura from the rapidly growing town of Santa Monica.

Some years later, during the hectic period of the first World War, when steam roads were under federal control and further extensions were out of the question, the privately operated interurbans felt no such deadening of initiative; hence, projected freight-hauling trolley lines to industrial and agricultural areas, hitherto served exclusively by Class 1 carriers, were the order of the day. At that time PE blossomed forth with plans for a short connecting road between Glendora and Lone Hill, thus making, in effect, an alternate route to San Bernardino. Too, there were surveys made to extend the Fullerton Branch through the busy canning and rich citrus areas of Anaheim and Orange to Tustin. Besides opening up a new region, this projected extension would cross and link the Santa Ana-Marlboro iron with the southernmost rails of the Fullerton Branch. But the California Railroad Commission viewed with disfavor these proposed lines of war time, thereby quashing for all time the likelihood of any marked increase in PE mileage.

But there was one other major improvement—probably the most practical of all trackage additions or relocations—which almost became a reality. It concerned extending the Main Street Station elevated tracks through the congested district of Los Angeles to a junction at grade with the private rights of way of the Northern and Southern divisions at Macy Street and Long Beach Avenue, respectively. This costly venture was incorporated in a comprehensive union terminal plan of the steam railroads. Submitted to popular vote in 1922, the entire project was defeated—a blow which greatly retarded the future passenger traffic development of the company.

But if these adversities hindered further growth, they could scarcely dim the rosy luster of PE's yesterdays, whose real flavor can be gleaned only from the older executives when they're in a reflective mood. A good meal, a stout cigar, some discreet prodding, and perchance they may be eased into a mellow look-back-to-glory mood. Then it's paper-and-pencil time for the listener, or the homey, colorful reminiscences will slip by like a rebuilt 1200.

Trolley days and trolley ways!

Yes, Pacific Electric set the pace in interurban trips, private trolley parties and beach-to-mountain electric excursions shortly after the turn of the century. New England had its *Trolley Wayfinder,* New York its *Trolley Explorer* (all good street railway touring periodicals), but only the Southland had its lavish booklet describing the trip of trips: "to the scenic Orange Empire on the big red cars."

"Shucks," a PE brass hat remarked, "they had *street car* parties in the east; we had *interurban* trips here. None of your rural side-of-the-road, nickel-a-zone service; ours was speedy, private-right-of-way operation, with cars built for a select clientele and used exclusively in party service. And personally conducted all the way . . . a feature long remembered from Phoenix to Philadelphia. Why, a stranger would no more overlook our Orange Empire Trolley Trip in the early Model T days than he would miss a trip to Catalina today. It was the thing to do, m'boy, the only way to really see Southern California."

The 175-mile Orange Empire jaunt was the foremost of all the four trolley trips featured by PE. For $3.50 (later raised to $4) one could take a "specially equipped sight-seeing electric car" leaving the Main Street Station daily for a "journey of delight through the Kingdom of the Orange." Going directly east through the opulent citrus fruit area to Rialto, thence south to Riverside, the party stopped at the Mission Inn for lunch. Then a timely "All aboard!" from the guide-lecturer and the group took the special for San Bernardino and Redlands. At the latter town the

excursionists were taken by bus up to Smiley Heights, where one viewed the great mountains of the San Bernardino range—some towering over 11,000 feet into the clouds. Finally the trolley trippers sped back through Berdoo and "Orangeland" to Los Angeles, arriving in time for supper.

Then there was the Balloon Route Trolley Trip over the old Los Angeles-Pacific to the growing town of Hollywood, to Santa Monica, Playa del Rey (lunch stop), Redondo and back to Los Angeles by the Venice Short Line. The Old Mission Trolley Trip to historic San Gabriel Mission, to Pasadena, and to the Cawston Ostrich Farm (on the now-abandoned pioneer interurban to Pasadena) was later merged into the Balloon Route.

Lastly, the Triangle Trolley Trip! A pleasing seaside ramble to San Pedro (clear out on the Point Firmin line, scrapped many years ago), thence south along the "Gold Coast" to Balboa, doubling back to Huntington Beach, up the cross-country branch (long since abandoned) to Santa Ana, and a fast straight ride to the city via Artesia and Watts.

To the "big four" personally conducted trips we may append a non-supervised fifth —the ride to Mount Lowe. Advertised as the "Greatest Mountain Trolley Trip in the World," it was tops for scenery, for scientific study (the big Lowe Observatory telescope and three-million-candlepower searchlight created no small interest in its day), and for variety of rail operation. One took the through interurban train to Rubio Canyon, then a 3′-6″ gauge cable car up a 62 per cent grade to Echo Mountain, and finally a narrow gauge trolley car up-mountain until the 4420-foot altitude of Ye Alpine Tavern was reached. But when Ye Alpine Tavern burned to the ground in 1936 it marked the end of the most spectacular bit of railroading on PE.

Obviously, the day of personally conducted trolley trips is over, yet Pacific Electric still has sizable party movements, and if there's any velvet in passenger operation it is in hauling people *en masse*. The *Catalina Special* is one facet of this movement, the Santa Anita race track extras are another. When the bangtails are off, the passenger department prepares a fleet of three- and four-car trains and smiles happily. Or it may be the Los Angeles County Fair up Pomona-way and there's more rejoicing, for it means extra crews, augmented service and increased revenue. Again, when the fleet comes in, as high as 10,000 sailors "hit the town" via PE; it's shore leave for the seamen but it's work, carefully planned and nicely executed by the passenger staff, which makes the peak service possible.

Over on the Western Division a phone rings in the big West Hollywood car house (formerly called Sherman—a very famous name on the old Los Angeles-Pacific) and the receiver is quickly lifted.

"This is Jones, passenger department," comes the voice from the other end of the wire. "How many extra 600's have you got in good running order? We got word that Tibbett and Lily Pons are going to be at the Hollywood Bowl next month—they draw a big crowd, y'know. . . . Yes, we'll need all the 600's in the barn, may haul about 3000 that night. Everything in apple-pie order? Fine! We'll shoot you the dope later. G'bye."

So much for Pacific Electric yesterday and today—but what of the future? What of PE tomorrow? Everything seems to indicate that the backbone of the country's biggest interurban will continue to be its freight traffic on rails. Passenger service is becoming more and more motorized, and the time may come when only the most heavily traveled lines will see the "big red cars." Already the Temple City run has been abandoned, plans are under way to discontinue passenger service on the two Pasadena lines, and as this is being written the six deluxe 1200's are operating only as far as Covina on the San Bernardino route.

Times change, and Pacific Electric has no alternative but to change with them. Once advertised as the "World's Wonderland Lines," this interurban has relinquished most of its scenic tourist travel to the automobile. It no longer operates local street cars in Pasadena, Long Beach, Santa Monica, Pomona, Redlands, San Pedro, and other communities. Yet PE's freight service is better than ever (it is receiving eight additional box motors) and shows every indication of a reasonably lucrative future. Moreover, the company was one of the earliest to see the opportunities of door-to-door service, which was established in 1933. Its growing Motor Transit Lines operate buses coordinated with rail service. Indeed, it has tied together the steam train,

trolley, bus, and truck to the greatest advantage of the public, the company and the stockholders. A Southern Pacific transcontinental ticket is honored on PE cars and buses to many points in the Los Angeles area.

The biggest factor in the decline of passenger business is, as every railroader knows, the private automobile. Moreover, the drubbing a steam road takes is nothing compared to what the short-haul interurban suffers, and the Pacific Electric is no exception to this rule. "Give us the traffic and we'll provide the cars, plenty of 'em, for the interurban train is the cheapest way of transporting passengers in quantity," a Glendora conductor told me. This is clearly brought out in the company's brief to abandon passenger service on the Pomona-San Bernardino line east of Covina. Reason: the lack of patronage. Yet the memorandum in regard to Pomona wisely goes on to say:

". . . during the Fair [Los Angeles County Fair] season the traffic is such that it cannot be properly handled exclusively in motor coach service without an unjustified expenditure for extra equipment. The retention of rail facilities and the operation of rail service offers an economically sound plan of providing the necessary seasonal service."

Similarly, the company found, after experimenting unsuccessfully with all-bus operation (except for rush hours) on the Glendale-Burbank line, that traffic was heavy enough to warrant a complete conversion to all-rail service with modern cars. As a result 30 P. C. C. streamliners were purchased, and both the patrons and the railway are highly pleased.

Frequently, however, a state-built superhighway (or "freeway," as they are called in Southern California) is constructed parallel to an interurban. If traffic is heavy on the electric line an all-out modernization of track and equipment may ensue so that rail operation is commensurate in speed with that of the freeway. On the other hand, if trolley revenue is marginal, such costly rehabilitation may not be warranted, and freight service on the rails, with buses via the "dream highway," is the only solution. Or, going a step farther, if carload freight, too, is extremely light, the company may tear down the trolley wire and substitute Diesel-electric motive power (a possibility which PE is taking under advisement) or discontinue operation entirely.

Recently the company planned to discontinue the two Pasadena lines, Pasadena Short Line and Pasadena via Oak Knoll, a winding track through one of the most beautiful subdivisions in the country. These lines were to be supplanted by buses on a new highway, but increased traffic and defense orders may postpone this important abandonment indefinitely.

There'll be some changes made, yes, but the Pacific Electric will still continue to be a vital factor in the continued growth of Southern California, primarily as a heavy-duty freight railroad but also as a passenger unit operating cars and buses. What the famous Huntington-built library and art gallery (at San Marino) is to art and letters, so the Huntington-founded Pacific Electric is to the commercial and industrial growth of his beloved Southland.

The old broad gauge.

While 99.4 per cent of all United States railroads are built to the standard gauge of 4′-8½″, this has not always been so. In the 1870's the country was swept by a narrow gauge fever, and earlier some construction engineers were firm in their belief that a wider gauge would be safer and more practical. The widest gauge used in this country was 6′-0″, and from 1867 to 1871 a passenger could actually travel all the way from New York to St. Louis on what was called the "Great Broad Gauge Route," a combination of lines that promoted the gauge difference to the full in advertising and solicitation. The key to this route was the New York & Erie, now the Erie, although part of it included what is now the southwest end of the Baltimore & Ohio. Parts of what are now the Delaware & Hudson and the Delaware, Lackawanna & Western were also built to six-foot gauge.

*They'll Never Go Again**

★ The railroad dismantling forces can make an old car or locomotive pay big dividends.

SCRAPPING a perfectly usable locomotive is often very good business for a railroad. The mechanical improvements in new locomotives frequently make them so much less expensive to operate that it becomes cheaper to invest hundreds of thousands of dollars in new power than to keep shoveling excess quantities of coal into the greedy fireboxes of the older engines. Thus the railroad periodically finds an assortment of old locomotives upon its hands, no longer best fit for their former duties but too valuable to throw away carelessly.

Sometimes the superseded locomotives stand in engine yards for years, cabs boarded up, tenders unpinned and bearings white-leaded, held as insurance against need in time of flood, boom, hurricane, or other unforeseen emergencies. But comes war, with its high scrap prices, and the management may find it wise to convert these obsolete machines into useful cash.

Take the Louisville & Nashville, for example: The L&N runs a Class 1 railroad with main lines between St. Louis, Cincinnati, and New Orleans, and with important branches throughout the central South. By 1940 it had accumulated 37 old locomotives and 1529 obsolete freight cars—a scrapping problem involving more than 30,000 tons† of steel, iron and alloys. Previously it had been the practice of the L&N to sell the cars and engines outright to a salvage company, but times change, and L&N officials felt it would be more efficient to do their own dismantling, saving good parts and selling the remaining scrap.

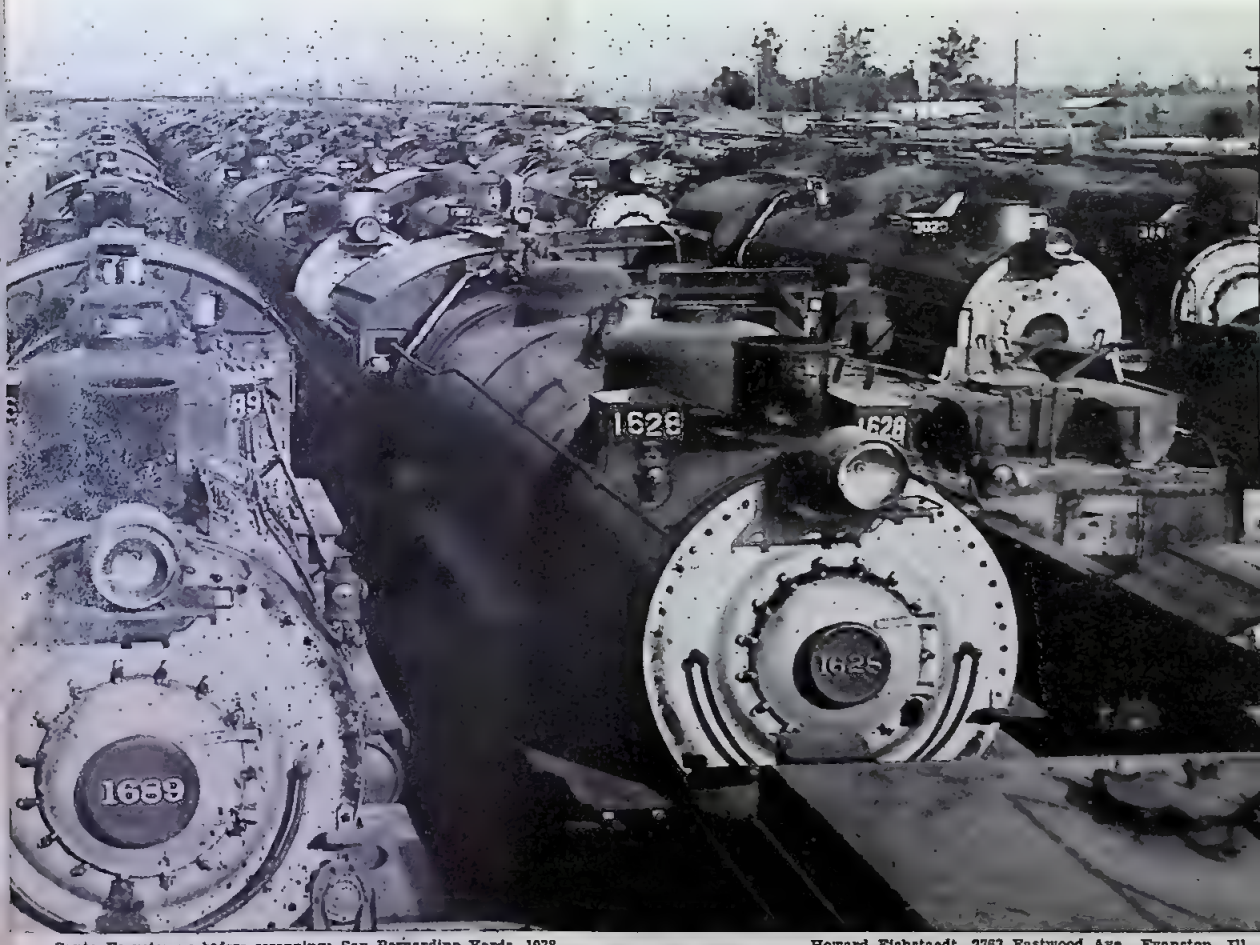
Two points were picked for the operations: Strawberry, Ky., near the South Louisville shops, and Boyles, Ala., near Birmingham—strategic locations to handle the equipment from the north and south halves of the system. The big job was done in 10 months, netting over $300,000 from the sale of scrap alone. The value of the salvaged materials was even greater.

Locomotives are deadheaded into the plants in regular freight trains with their main rods removed to reduce the friction of reciprocating parts. A man rides the cab to be on hand in case of trouble. As soon as possible after the engines arrive at the yard they are removed from the storage sidings and placed on what is commonly called the "burn-up track." Beside the burn-up track are two others, one for cranes with hooks or magnetic lifting devices and the other for the cars waiting to carry away scrap metals and salvage parts.

While mechanics remove bells, pony truck wheels, tender wheels, springs, superheaters, generators, driving rods, triple valves, angle cocks, air hose, and any other parts still serviceable as replacements for other locomotives, the welding men start to cut the engine right down to the rails, following blueprinted specifications planned by the mechanical department. The cab is one of the first things to go. Then welders cut off the top parts of the boiler. The crown of the fire box comes off in one piece, then the steam dome, firebox sides and boiler parts, and finally the frame itself.

Over to the side the large pieces are broken down to more convenient sizes for shipping, the boiler flues are stacked neatly inside staked piles, and wheels are loaded

Most of the locomotives scrapped on United States railroads average 40 years old, but a real old-timer gets into the line occasionally. More small engines are retired than Mikados or Pacifics, yet certain types seem to have shorter lives than others. The youngest locomotives scrapped are experimental models.



Santa Fe veterans before scrapping: San Bernardino Yards, 1938. Howard Eichstaedt, 2763 Eastwood Ave., Evanston, Ill.

into gondola cars. Soon the whole scene looks as bare as an old stereo of a Civil War battlefield.

Cars are scrapped differently, since they contain so many wood parts. As soon as the usable parts are removed, the wood bodies are unfastened from the frames, toppled over to the side, and set afire.

Salvage metals are worth much more if they are sorted. Nothing can make more trouble in resmelting than a good percentage of foreign metals in a melt.

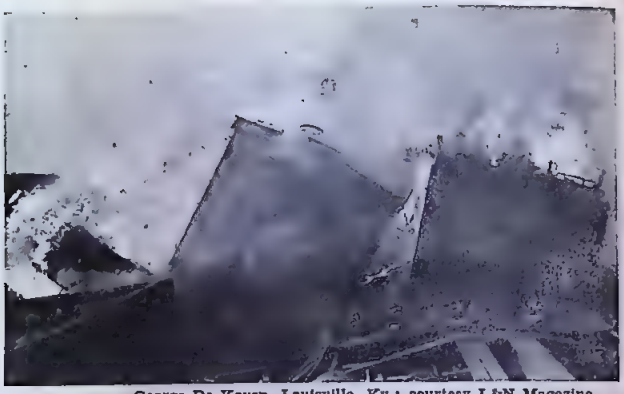
Material from the retired rolling stock is sorted into 10 major classifications: bolsters and truck side frames; cast iron; cast-iron brake shoes; couplers and knuckles; flues, tubes and pipe; malleable iron; melting steel; sheet scrap; structural wrought iron and steel, uncut; and destroyed steel cars and tenders. These classifications, incidentally, have been set up according to a plan recommended by the A. A. R.

What happens to reclaimed materials? Railroad frogs from the piles of discarded switch parts are first inspected for deep cracks or fissures. They are worthless if any are found. The usable frogs are ground down to remove all fatigued metal surfaces. (You've noticed how old rail can get that riveted-over effect.) New metal is then deposited wherever needed by welding processes, alternating the deposits at first so the heat will not break down the structure of the original metal.

Babbitt dross, the scum that is skimmed off from the pots at bearing plants, used to be

* Information courtesy *Louisville & Nashville Magazine* and the *Journal* of the Pacific Railway Club.

† This includes both salvage (approximately 9000 tons) and scrap (approximately 22,000 tons).



George De Koven, Louisville, Ky.; courtesy L&N Magazine.

Box car bonfire.

Old wooden cars would make a lot of kindling wood for someone, but it would be more work than it's worth to salvage wood bodies for fire wood. After usable metal parts have been removed, the car bodies are simply burned.

sold as junk. Now Southern Pacific purifies the oxidized metals to a very thorough degree, producing 1700 pounds of good metal from 2800 pounds of dross.

Couplers are inspected and built up where worn in the same manner as the switch frogs. Occasionally parts need to be straightened, and this operation is done upon a large hydraulic press.

Packing from journal boxes, a fibrous waste saturated with oil, can be reclaimed, but with modern high speeds on freight trains the quality must remain high. The reclaimings are cleared of oil with jets of steam; the oil is purified and used over, while the waste goes to a scale where the decrease in weight indicates the efficiency of the oil removal operations. A machine then pulls the waste apart while a blast of air blows away dirt, then a tumbling machine shakes out more dirt, and finally the waste goes to the carding table, where it is inspected and picked of all short strands and foreign objects. It is then ready to be soaked again in oil.

Hardened parts such as coupler knuckles, rail anti-creepers, and tools are annealed (made soft), bent to shape, then rehardened. The worn track shovels have their edges shortened and soon become caboose shovels, good as new.

In all salvage work the shops work in very close cooperation with the stores department, the latter being in charge of storing all new or reclaimed materials until needed.

Thirty years ago very few materials were reclaimed by the railroads; all was sold as scrap. At that time the Santa Fe had a scrap yard for its obsolete equipment in Chicago, near buyers. It became evident to that company that many of the materials out of the mixed scrap would be worth more to the railroad as reclaimed parts, so a blacksmith was set to work in an old discarded box car body, straightening out small items that had bent or twisted in service. The idea was a

George De Koven; courtesy L&N Magazine.

Salvage from old cars.

The wood bodies that rolled thousands of miles on these trucks have been consigned to the flames, but some of the trucks, or at least parts of them, will continue to serve as replacements or even under rebuilt car bodies.

George De Koven; courtesy L&N Magazine.

Ex-freighters, Strawberry, Ky.

It's 54 years since the Rhode Island Works built No. 649, six-wheel switcher shown below, for the L&N, and 35 years since the 1170, above, left the L&N's own shops to start pulling freight. Both have repaid their original cost by any standard of depreciation accounting, and careful scrapping will now make them yield still more service, not only in the scrap metal value but in useful parts of all kinds. A locomotive stripped of its outer sheet-metal boiler covering is a mighty crummy looking piece of machinery (below). All that fuzzy white stuff is the asbestos boiler lagging which keeps the heat inside where it belongs. The smoke box, on most railroads, is not lagged, and that's why rivets can be seen around the front end while the surface of the boiler proper is smooth and sleek and perhaps polished.

George De Koven; courtesy L&N Magazine.

success and soon heavier forgings were carried on, new buildings were erected, machinery was installed —this machinery itself at first made from salvaged parts. Officials of other companies visited the plant and soon established similar efficiency spots on their own roads.

Now efficient material reclamation is practically universal in railroad dismantling yards, the rolling stock, track parts, and other items each coming to as useful an end as is possible.

The methods of scrapping and reclaiming railroad materials have become of far more importance than ever in the last decade, as the need for highly efficient operating practices has increased. For instance, locomotives have not only been worn out, but have be-

come obsolete because of new developments, so that in the last nine years railroads have actually retired more locomotives than they have purchased—15,917 against 1843. Yet the capacity of the roads has increased in that same period because of the much greater power and availability of the new units, and the efficient scrapping of retired units actually helped many roads to weather the financial depression by giving them a better return on the old locomotives than they might have expected.

The end of L&N locomotives.

Many loosely assembled parts can be unbolted or otherwise removed intact from old locomotives, but for most of the scrapping work the welding torch does the job. Sections of the locomotive are cut apart and big pieces are still further reduced. Various kinds of metal are segregated, and boiler flues (bottom photo, lower right), wheels, and other parts are stacked in piles. By carefully planning the job, the railroad gets highest prices for sorted scrap metal and also obtains many repair parts which it would otherwise have to buy new or perhaps rebuy from scrap dealers who had bought locomotives intact but at scrap prices. Very few second-hand locomotives are now resold for active service on smaller lines.

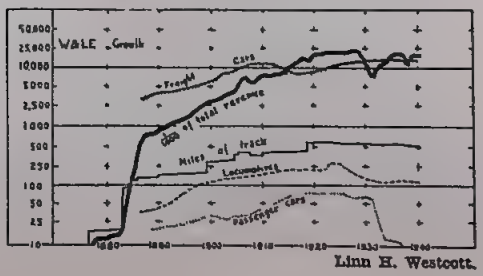
Both photos, George De Koven; courtesy L&N Magazine.

Wheeling & Lake Erie

★ A thumbnail sketch of a no-passenger railroad.

"OUR freight trains are never slowed up by going into side tracks for passenger trains," advertises the Wheeling & Lake Erie. The last passenger train was the round-trip day-local between Cleveland and Wheeling, 152 miles, abandoned July 17, 1938. The high-stepping Class E-1 Atlantics have been scrapped, and the glamorous old 1900 vintage coaches are in maintenance-of-way service. The W&LE is now a one-speed railroad.

This 508 miles of heavy-duty railroad was a part of the vast Gould dream of a coast-to-coast system back in the early days of the century. The missing link at that time was the present Pittsburgh & West Virginia line from Pittsburgh to Connelsville, Md., which was built in 1930 but without the coast-to-coast implications. W&LE still has a strong natural traffic affiliation with P&WV, but the I. C. C. in 1932 denied the Pittsburgh road permission to buy the W&LE, which is now a cousin-by-ownership of the Nickel Plate.



Linn H. Westcott.

Frank Quin, New York Division, Railroad Enthusiasts.

Railroad Wond in South

★ Trains of seven railroads this scenic region of hills and rivers.

THE railroad wonderland you seek may be right in your own back yard. Less than 100 miles from New York City we found a region of hills, rivers, and railroads that competes with that traditional happy hunting ground of the railroad lover, Colorado.

The area centers about Middletown, a city of some 20,000, and Campbell Hall, a small railroad junction and center of activities. From New York northwestward run the main lines of the big Erie and the medium-sized New York, Ontario & Western. From the Northeast, over the Poughkeepsie bridge, comes the New Haven with its big interchange yard at Maybrook, near Campbell Hall. From the Pennsylvania coal fields come the Lehigh & Hudson River and the Lehigh & New England, both delivering to the New Haven and thus forming an inner seaboard route avoiding congested New York. From Kingston, northeast in the Hudson valley, the New York Central extends its Walkill Valley Branch down to Campbell Hall. The little

All these pictures are within walking distance of Campbell Hall.

The two hard-working enginemen above are turning one of two Ten-Wheelers that have just arrived in Campbell Hall with a New York Central train over the Walkill Valley Branch. The Ten-Wheelers are both old Ulster & Delaware engines, and are used to double-head the quite respectably heavy freights on this line because the bridges are not strong enough for heavier power. At upper right the two Ten-Wheelers are homeward bound for Kingston, N. Y., with carloads received from the Lehigh & New England. Below, at left, is a Lehigh & Hudson River freight heading for Maybrook Yard, where it will turn the train over to the New Haven. The New Haven switcher is a three-cylinder job sitting in the shadow of her own smoke while doing a bit of midday pickup work at Campbell Hall. As the map on the next spread shows, the New Haven's

Donald W. Furler, 65 Glen Ave., Glen Rock, N. J.

erland
ern New York

crisscross

Frank Quin.

Middletown & Unionville [see page 2, May TRAINS] reaches south to the NYS&W.

Through Campbell Hall passenger trains once ran to New England via the Poughkeepsie Bridge, finished in 1889, and the old Central New England Railroad, now New Haven, into Hartford. Now the only passenger trains through here are the NYO&W's Nos. 1 and 2, which do allow a full day for watching the assorted locomotives and freight traffic. Another way of seeing the section by train is to take the Erie to Port Jervis and return as far as Middletown. Then, from Middletown, ride the NYO&W late-afternoon train back to Weehawken.

Through this rough-and-tumble country the Erie has not only its main line for passenger trains and light freight, but its Graham low-grade freight line, which branches off in the course of the stiff climb up the hill side northeast of Port Jervis and doesn't return to the main until almost to Suffern. Both the NYC and the L&NE come into Campbell Hall over Erie tracks.

Maybrook Yards are a few miles northeast of Campbell Hall, and so switchers must be sent over to pick up what local freight has been left by the NYO&W and the NYC. Trains of the two Lehigh roads run right into Maybrook. In lower right corner is the New York, Ontario & Western *Mountaineer*, westbound near Campbell Hall. You'll find more pictures on pages 42 through 45.

Robert A. Le Massena, 398 N. Maple Ave., East Orange, N. J.

John B. Reschke, 690 8th Ave., New York, N. Y.

Series by Frank Quin.

With cameraman at Campbell Hall.

In the railroad wonderland of southern New York State, Campbell Hall is the best place of all to watch trains. The sign is on the New York, Ontario & Western station, catercorner across the junction from the interlocking tower. Here the track of the Erie's Montgomery Branch crosses the NYO&W main line, and just a fraction of a mile south is the Erie's Graham freight line.

If it isn't on one line it's on another! A New York, Ontario & Western Mountain type rumbles by with an eastbound freight. The frame interlocking tower is the vantage point from which the pictures below were taken. Rails in the foreground are the Erie's Montgomery Branch, also used by the Lehigh & New England and, north of the junction, by New York Central's Walkill Valley line.

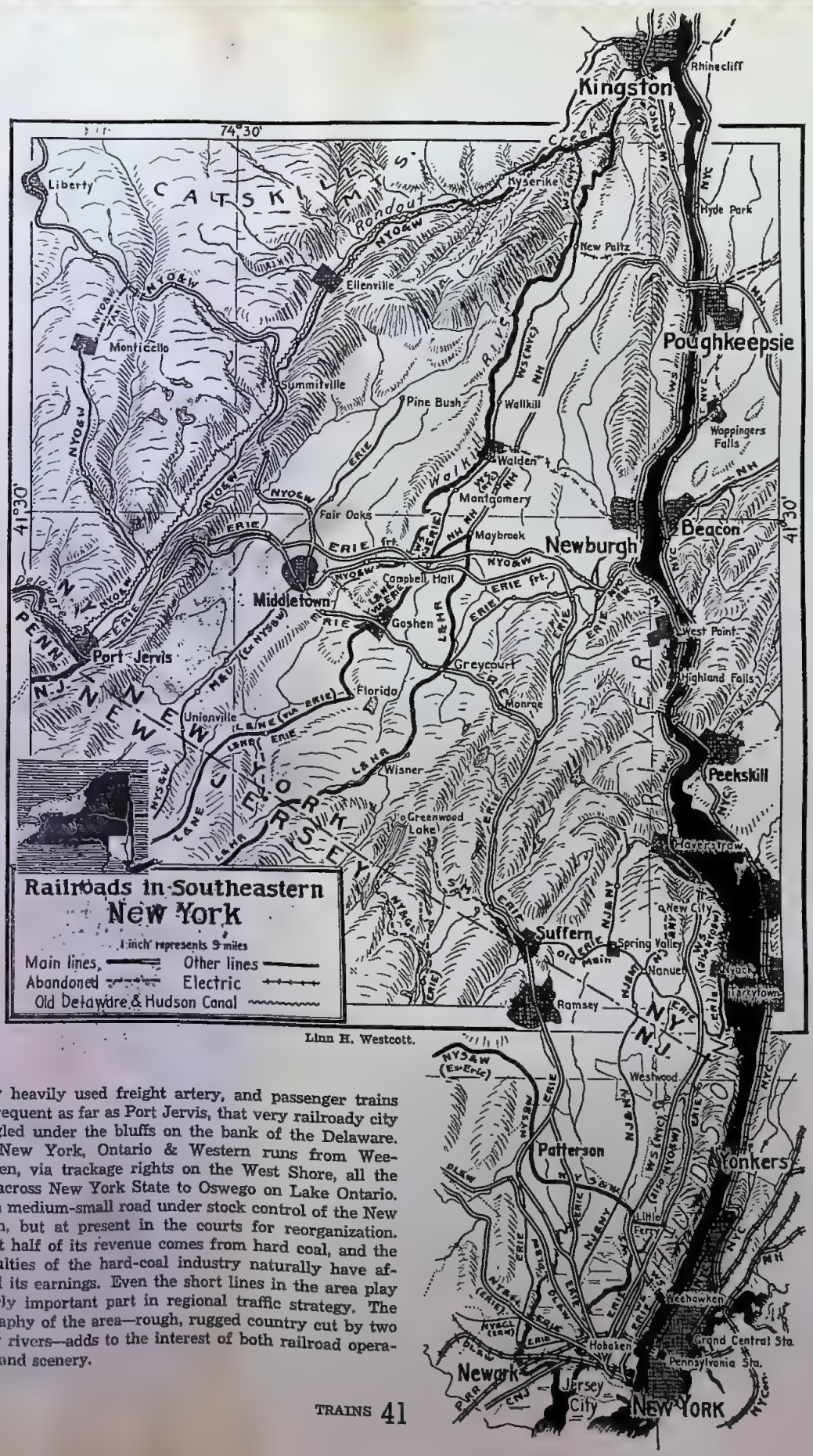
Looking north from the interlocking tower: The freight train at right is Lehigh & New England, heading for the New Haven's Maybrook Yard, which it will reach over a few hundred connecting feet of its own rails. The two NYC Ten-Wheelers wait for some cars of cement and coal from the L&NE train, after which they'll return to the West Shore main line at Kingston.

From the west along the NYO&W main line comes the Cornwall local freight behind Ten-Wheeler No. 228, used on passenger service during the Summer rush to the Catskills. Not so far in this direction the Erie's Graham freight line crosses on an overhead bridge, and the conductor in an Erie caboose pulling across this junction can often see the locomotive crossing the overhead, a mile away via Erie.

Only passenger service to Campbell Hall is NYO&W, and this is train No. 1 making the station stop. The wye track shown in the second picture above is to the left, out of the photo. The switch just behind the last coach is the New Haven track to Maybrook, and beyond that is the armstrong turntable used for turning the two little Walkill Valley Ten-Wheelers (top, page 38).

Map of railroad wonderland.

Here is the intersection of two natural trade routes: the railroads from New York City crossing the ridges to reach the upper Delaware and Susquehanna valleys, and the railroads following the ridges northeast-southwest from the Pennsylvania coal fields and industrial region to New England. Up the Hudson River itself run two main trunks of the New York Central—the West Shore (originally built in competition with the prosperous road on the east bank), and the River Division on the east shore. The West Shore handles much of the NYC's export and import freight to and from the docks at Weehawken. The Erie, heading northwest through the territory, is a



really heavily used freight artery, and passenger trains are frequent as far as Port Jervis, that very railroady city snuggled under the bluffs on the bank of the Delaware. The New York, Ontario & Western runs from Weehawken, via trackage rights on the West Shore, all the way across New York State to Oswego on Lake Ontario. It is a medium-small road under stock control of the New Haven, but at present in the courts for reorganization. About half of its revenue comes from hard coal, and the difficulties of the hard-coal industry naturally have affected its earnings. Even the short lines in the area play a fairly important part in regional traffic strategy. The geography of the area—rough, rugged country cut by two major rivers—adds to the interest of both railroad operations and scenery.

Frank Quin.

To and from Maybrook classification yard.

The chunky Mother Hubbard Consolidation above is pulling a Lehigh & New England trainload of coal and cement through the quiet countryside to Maybrook Yard, where it will be turned over to the New Haven. Below is booster-equipped No. 453, a heavy Mountain type, heading out of Maybrook Yard, over the New Haven lead into Campbell Hall, with a fast New York, Ontario & Western freight for Carbondale, Pa. The NYO&W main line tracks can be seen in the background at extreme right.

Donald W. Furler.

Spring fever stimulant.

This is the sort of thing that makes TRAINS editors feel like taking the afternoon off: a heavy Lehigh & Hudson River Consolidation raising the rustic echoes with a Maybrook-Port Morris freight near Craigville, N. Y. Below is a Monticello Branch campers' special on the NYO&W, rolling into Middletown behind Ten-Wheelers 245 and 251. During Summer months the NYO&W runs numerous special trains and increases its regular schedules to the camping and resort area.

Robert A. Le Massena.

A. V. Neusser, 40-21 61st St., Woodside, L. I., N. Y.

Donald W. Furler.

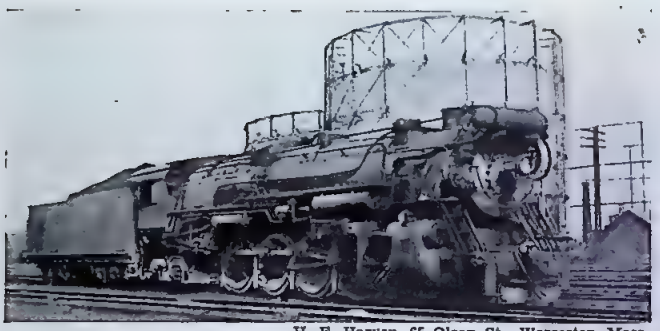
New and old on the New York, Ontario & Western.

Many Eastern roads at one time or another tried the cab-in-center type of locomotive, and the New York, Ontario & Western was no exception. It still uses a number of Moguls like the 272 and Ten-Wheelers like the 245 shown in TRAINS for February, 1941. A fairly general nickname for this type of locomotive is Camelback, but many authorities state that the true Camelbacks are the Ross Winans Camels such as used on the B&O around Civil War time. These engines had the cab completely astride the boiler, like a howdah on top of an elephant. The Mother Hubbard type has the cab around the boiler, not on top, and is a vanishing breed. The 272 was snapped at Summitville, N. Y. Heavy and modern, in contrast, is the 407, one of the NYO&W's Class Y Mountain types built by American Loco in 1923, photographed at Middletown, N. Y.

The heavy-duty railroad.

Erie No. 6, *The Lake Cities*, is near Monroe, N. Y., at right, carrying green flags for five extra sections, special trains carrying International Business Machines employees from the company headquarters in Endicott, N. Y., to "I. B. M. Day" at the New York World's Fair, May, 1940. Below is one of the Erie's Berkshire freighters with caboose standing right plump on the NYO&W crossing at Campbell Hall, waiting for the conductor to register off the New Haven track from Maybrook. The Erie milk train (bottom) has some passenger cars back around the curve. It is No. 9 deadheading empties back to the dairy country.

Top, A. V. Neusser; center, Robert A. Le Massena; bottom, Frank Quin.



H. F. Harvey, 65 Olean St., Worcester, Mass.

Freight for NYNH&H.

Much of the New Haven's freight is pulled by the 70 Mountain-type locomotives of the R class. This is an R-2a, pictured at Worcester, where the New Haven delivers much freight to the Boston & Maine for northern New England.

As Others See Our Railroads

★ A British schoolboy looks at the New Haven.

COULD we but see ourselves as others see us! It's always interesting—and sometimes revealing. From the British *Railway Magazine* we reprint the observations of David Elliot, 14-year-old English schoolboy, after a trip from Long Island to New London, Conn.:

"We docked directly opposite the railway station," he writes, "a large brick building that looked its part very well. Disembarking and crossing the tracks, which were timbered like a crossing level with the platform, we entered the station. We thought the tracks were just a branch line to the docks, as there were no trains to be seen, but as there were color-light signals, level crossing gates, and a large station, we gathered it was the New Haven's main line to Boston, two tracks with steam haulage, and automatic block signaling."

To get a better view of the railway the author and his friend then walked to a stretch of road which parallels the railway at a point where both cross the Thames River by opening bridges. "Here we were on a level with the railroad, and could see it well. Hardly had we got on to the viaduct when an enormous eastbound freight thundered past, about 65 loaded cars hauled by a huge heavy-browed Mountain-type freight locomotive with a 12-wheel tender. It made quite a sight as it pounded at about 35 up the grade and around the sharp curve, its exhaust belching black smoke, and its long line of cars trailing behind—about 6000 U. S. tons —what the strain on the first coupler must have been I do not know. Soon it roared over the bridge and was gone."

Crossing the river, the writer and his companion found a first-class viewpoint at Groton Junction. "The two tracks that come off the bridge split into two pairs, and the main line to the east becomes four-tracked by the signal box [tower], while the other line, which goes up to Maine and New Hampshire, becomes single a few miles north of here. A passing loop, for locomotives, connects the two, and farther east there are some crossovers from one track to another. The signals are semaphores and the points [switches] are indicated by ground signals, called 'dwarfs.' All the points are controlled electrically from the signal box, which is a solid two-story brick building, rather tasteful, I thought. We watched several trains go by, including the *East Wind*, an express from Maine hauled by a standard 4-6-2 and composed of cars painted a rather hideous cream and yellow. After this we saw some big Hudsons go by; they are the New Haven's largest locomotives, comparable to the New York Central's J-3 4-6-4's. We dubbed an oldish freight engine 'Bertie,' a Mikado with a dirty tender and a sort of inferiority complex, if you know what I mean. He pottered around with a few freight cars, trying to get up enough courage to go across the bridge to New London, which after about a quarter of an hour he finally did."

The two observers were next invited up into the tower by a friendly signalman, "a very nice chap of about 35, I should say, with a pleasant face and a broad grin. In the box was a large desk with telephone bells around the walls, a panel with dwarf levers, and a large train-indicator diagram much the same

as at Waterloo, except that the lights went off to indicate a train in that particular section or closing that track circuit instead of going on. There were windows on all sides of the room, giving a fine view, and the desk stuck out in a bay window. We could see the bridge and all the tracks easily from up there. The signalman told me that everything was track-circuited and that he controlled the power to the bascule bridge. Before the power was installed his box had 150 mechanical levers."

The mysteries of American train dispatching, with its written or telegraphed train orders, next claimed the attention of the visitors. "Messages would come in and the signalman would then scribble down indecipherable hieroglyphics that were the 'train orders.' Then he would get up and nonchalantly twiddle a number of handles, often keeping on talking at the same time. Every now and then he would telephone to or be telephoned by the men in the adjacent signal boxes. Extraordinary monosyllabic conversations would ensue. A mysterious 'Mac' was the most frequent caller, and our signalman at Groton—pronounced by him 'Grooden'—frequently called Mac about a certain 'southbound,' and kept asking what had happened to it. We never saw that mythical 'southbound,' and we still wonder what befell it."

Traffic now became busier, and the visitors accordingly adjourned to the pier alongside the station in order to wait for the steamer, and this furnished a fine vantage point for seeing the passing trains. "The first express to come by was the New York-bound *Merchants Limited*, a very 'swanky' all-Pullman extra-fare train. It was not very long—about 9 or 10 cars—but it was hauled by a big streamlined Hudson. Very soon the 'down' *Merchants Limited* also passed on its way to Boston." [The *Merchants Limited* is the fastest train on the service, and has cut the time over the 229 miles between New York and Boston, including stops at New Haven and Providence only, down to 4 hours 15 minutes. This is the only express in either direction which runs through New London without stopping. The fastest run is over the 113 miles between New Haven and Providence in 114 minutes each way, including one slack to 30 miles per hour through New London, five slacks to 45, two to 50, and a number to 60 miles per hour.]

"Soon a new locomotive appeared—a heavy Diesel-electric shunting engine or switcher. It was built by Alco—the American Locomotive Company—and looked fairly new; it was carried on two four-wheel bogies [trucks], and had a funny bell that tinged continuously somewhere inside. We nicknamed it 'Busy,' as it rushed about the station yards apparently without rhyme or reason, causing other trains to hoot furiously when it got on the through tracks.

"Soon a stopping train came in, hauled by a standard New Haven Pacific, with fairly small driving wheels, but capable of taking enormous loads at good speeds. I later saw a train composed of 15 or 16 heavy American passenger cars behind one of these engines. Their tenders are rather small, but doubtless they have track-troughs frequently on the New Haven. The station now got busy, and hardly had a section been cleared and the color-light signals gone off before the next train appeared and set them at danger again. From the station we could see the approaches to the bridge over the Thames, and thus could see the trains a few minutes before they arrived from this direction; the locomotives looked large and impressive in the twilight, as they puffed sedately around the curve with their bells clanging and headlights flaming. Presently a very long train appeared on the bridge; a little later a huge Mountain-type locomotive with cylindrical tender thundered by, followed by about 80 bogie box cars, most of them belonging to the Bangor & Aroostook RR., and all full of potatoes bound for the markets of New York City.

"Now the trains were coming thick and fast; light engines were puffing around; and 'Busy' was hard at it. An 'up' passenger train was held at the station 10 minutes or so, hooting furiously; eventually it moved on past the color-light signal at danger, and almost immediately the headlight of the next was coming around the bend behind. This stopped about five minutes, while at the same time a 'down' train, composed chiefly of Pullman sleepers, came in headed by a 4-6-4, which started at once to blow off. The sleeper soon moved out, with the engine slipping on the curve, and went roaring up the grade on to the bridge, with echoes that resounded over the whole waterfront. Then, at last, our steamer moved away."

Letters

★ Interesting sidelights on railroads as readers observe them.

Railfans Save Loco.

In February, 1941, Northwestern Pacific engine No. 23 (4-4-0) was resting on the scrap track at Tiburon, Calif., with her final day on this earth not far distant. In choosing an engine for the Railroadians' Sonoma excursion, we facetiously asked for the 23 and were properly astounded when we were told that if we wanted to use her the railroad would be glad to fix her up to the tune of $200! She was accordingly repaired and used with the 109 (4-6-0) on the excursion, which carried 450 fares in seven cars (electric cars never before used north of San Rafael).

After the excursion, NWP decided it might as well use her as long as she was in good condition, and except for a few brief periods of idleness and stationary-boiler work, she's been going ever since! The enclosed print shows her on No. 1, Sausalito-Eureka run.

D. S. Richter.
San Francisco Branch, Railroadians of America.

Eastern Railroad Grades.

In the article "Over the Berkshires" by H. W. Pontin in the April 1942 issue, it is stated that the Boston & Albany's ascent after leaving North Adams Junction, Mass., is "the hardest climb on any Eastern main line stretch." The author amplifies this statement by stating that the ascent is at the rate of 90 feet to the mile.

Now, if Mr. Pontin has reference in his claim only to the Eastern main lines of the New York Central System he is, of course, correct. On the other hand, if he intends his statement to be all-inclusive as far as Eastern railroad main line mountain grades go, he is sadly misinformed.

There are a number of Eastern railroads which have heavier main line grades than 90 feet to the mile. One of these is the Baltimore & Ohio, whose main line between Cumberland, Md., and Grafton, W. Va., has four grades that either average a rise of more than 90 feet to the mile or at some point on the climb negotiate the hill at considerably steeper ascent. Leaving Piedmont, W. Va., the famous 17-Mile Grade is climbed to Altamont at the rate of 101.37 feet per mile, a 1.92 per cent grade over the eastern front of the Allegheny Mountains. Between Frankville and Strecker on this same hill the rise is 116.2 feet to the mile, or a 2.20 per cent grade. Coming down this gradient, eastbound, there are two safety-switch interlockings for possible run-aways at Swanton and Bond.

Coming down off the Appalachian Plateau between Terra Alta, W. Va., and M&K Junction, the Cranberry Grade is descended for about 12 miles at the rate of 97.5 feet to the mile, or 1.85 feet in 100 feet. Between Rodemer and Amblersburg, on this same hill, the descending rate is 114.5 feet to the mile, or 2.17 feet in 100. After crossing the Cheat River, the Rowlesburg Grade is climbed for over 4½ miles between Rowlesburg and Blaser, W. Va., at 99.6 feet per mile.

The descent toward Grafton is known as the Newburg Grade and the steepest part of it extends for about 11 miles between Blaser and Hardman. It is only a 1.27 per cent grade as against the B&A's North Adams Junction grade of 1.70 per cent, but there is a portion of it between Austen and West End that is a 2.07 per cent grade.

These B&O grades are all three-tracked and signaled for either direction. This whole west end of the Cumberland Division between Cumberland and Grafton is signaled with the B&O's patented color-position-light signals, the finest in the world, bar none.

Normally, the tonnage trains move eastward, and on the Newburg and Cranberry

D. S. Richter, 1412 6th Ave., San Francisco, Calif.

grades 55-car, 4400-ton coal drags are pulled and pushed along with three Mallet locomotives, each a 2-8-8-0 with an average tractive effort of 112,000 pounds. Westward, the 17-Mile and Rowlesburg grades are overcome in the same manner, two Mallets on the head end and one pushing. Passenger trains with seven or more cars headed by a Pacific locomotive are helped by Mike pushers of the 4400 and 4600 series. All passenger trains of 10 or more cars, whether hauled by a Mountain type or a twin-unit Diesel, get one of these Mikado pushers. The B&O's famous S-1's and S-1a's (2-10-2) are not used on these hills because they are too rigid for the severe curves.

Walter F. Walton.

1623 Memorial Dr., Dormont, Pa.

More About the B&A.

"OVER the Berkshires" by H. W. Pontin was very interesting, and long looked for. However, the B&A's only tunnel is west of State Line, being in New York and not in Massachusetts.

While I would very much like to hear it, eastbound road and helper engines do not whistle off at Pittsfield.

Pushers on all eastbound trains are cut off at Hinsdale and not Washington, as stated, as the stretch between Hinsdale and Washington is level. Westbound pushers are cut off at Washington.

Eastbound freights stop at North Adams Junction for inspection and to take on water and a pusher; and, on leaving, the head end does whistle off.

Due to the war, freight traffic is exceptionally heavy, and it is becoming a common sight to see two Berkshires and two Mikados blasting their way up Mount Washington. At Hinsdale the lead Berkshire cuts off, turns on the wye, and returns light to Selkirk. The two pushers back down to Pittsfield. The one remaining engine, usually a Class A-1c 1400 series Berkshire, takes the train to West Springfield alone.

William M. Farrell.

51 Curtis Ter., Pittsfield, Mass.

[Mr. Pontin's reference to State Line Tunnel was rather vague as to its exact location.—*Ed.*]

This Is What's in a Name.

REGARDING your question "What's in a name?" in the February issue: True enough, neither Atchison, Topeka nor Santa Fe is on the main line of the AT&SF, and true enough, the business headquarters of the line—with the exception of executive offices in Chicago—are in Topeka, but you failed to mention the Topeka Shops—the one thing most important to me at present, especially on the first and fifteenth of the month. After all, I can't eat those memories of the WM, Ma & Pa, etc.!

Topeka Shops supply the entire Santa Fe system with spare locomotive parts and maintain equipment for the Eastern lines of Santa Fe. Topeka Shops turned out John Purcell, the dynamic leader of the Santa Fe mechanical department for 30 years. And you missed mentioning them!

Incidentally, I understand that the General Office Building of the Santa Fe in Topeka is the largest office building in the United States devoted exclusively to the interests of one business organization.

1001 Harrison St., Topeka, Kan. *J. C. Davis.*

Banjo Signal's Correct Name.

YOU stated that the photo on the rear cover of March TRAINS is of an old banjo signal on the Reading, near Rutherford, Pa. I believe the correct name for this type of signal is not banjo, but Hall. They probably received the name banjo because of their shape.

At the Reading Company enginehouse at Rutherford it is possible to see engines of four different roads: Reading, Central of New Jersey, Western Maryland, and Pennsylvania.

Bert Pennypacker.

547 E. Chestnut St., Coatesville, Pa.

Saved from scrap heap.

Back in February, 1941, Northwestern Pacific's No. 23 stood on the scrap track. As a result of a jocular request for her services by the San Francisco Branch, Pacific Division, Railroadians of America, she was repaired and is now in regular service between Willits and Eureka, Calif. This picture shows her at Santa Rosa in May, 1941.

The Month

★ First streamliner is junked; another rolls on.

★ The country's first streamliner, the *City of Salina*, has been junked. This is the train that the Union Pacific announced with much fanfare in May, 1933. It was built by the Pullman Company and delivered February 12, 1934. It toured the country and was placed on display during the second year of the Chicago World's Fair. On January 31, 1935, the three-car aluminum-alloy unit started regular service on the Kansas City-Salina, Kan., run, from which it was removed and replaced by a steam train on December 16, 1941. The first *City of Los Angeles*, replaced some time ago by newer equipment, has just recently been placed in service between Portland and Seattle as an extension of the *City of Portland* service from Chicago to Portland. The original Budd-built streamliner, the Burlington's *Pioneer Zephyr*, is nearing its two-millionth-mile mark and is doing 456 miles daily between Lincoln and McCook, Neb. The *Pioneer* was used to introduce streamliners on all runs now enjoying *Zephyr* service. Officials say it's still a "young" train.

★ The Nevada County Narrow Gauge Railroad, operating 21 miles between Colfax and Nevada City, Calif., has asked for permission to abandon service. It is one of the last three-foot gauge roads in California and, because of its convenient location on the main line of the Southern Pacific east of Sacramento, has long been a favorite with railroad connoisseurs of the San Francisco area.

★ Did you see the excellent 5½ pages of railroad pictures in the May 4 *Life*, telling the story of heavy wartime railroading in Yemassee Junction, S. C.? Roads featured were Atlantic Coast Line and the Charleston & West Carolina.

★ Refunds will no longer be made on unused Pullman space unless the reservation is canceled early enough so that the ticket number can be erased from the diagram before train departure, or unless the space could not be occupied because of late train connections.

★ The Central of Georgia is starting the Mikado on the way out. It has changed the class designation of its 2-8-2 locomotives to MacArthur, and the sign painters are replacing MK on the cabs with MacA [see cut].

★ The circle-trip fares by which one could travel from ocean to ocean and back home again for $90 coach, $135 first class, have been suspended. Some roads still have ample capacity for vacation and special travel, but others are crowded to the limit and so cannot encourage more business. Many Western excursion fares are still in effect.

★ Among the last of the new trains until after the war is the streamlined *Panama Limited*, which went into service May 3 between Chicago and New Orleans over the Illinois Central. As before, the *Panama* is an all-Pullman extra-fare train, but the running time has been cut to 18 hours. The cars, built by Pullman, were frozen by War Production Board order, but since they were so near completion were released to the IC and thus the old *Panama* equipment was made available for other purposes.

★ The New York, Westchester & Boston equipment runs again. Forty-two cars of this one-time New York suburban electric railroad have been sold to the U. S. Maritime Commission for use in Houston, Tex., transporting workers to shipyards. The Public Belt Line will furnish crews and motive power. The cars had been in storage in New York. Price: $3650 each.

★ The Pennsylvania Railroad is building two new freight yards, at a cost of three million dollars, in Baltimore, one at Bay View and one in the vicinity of Holabird Avenue in Canton. This is part of a general improvement campaign which has included extensive improvements at the Jersey City marine terminals and yards and in the Harrisburg vicinity.

★ *Fan Trip:* From Los Angeles, 7 p. m. July 3, return 9 a. m. July 12. Southern Pacific via Oakland and American River Canyon to Salt Lake City, thence Denver & Rio Grande Western, including 786 miles of narrow gauge, 551 miles by a special train, to Denver, Moffat Tunnel Route to Ogden, Western Pacific via Feather River Canyon to Stockton, and Southern Pacific back to Los Angeles. Detailed information available from National Travel Service, 515 South Spring St., Los Angeles.

M. C. Poor.

Motive power of the Cassville & Exeter.

The Cassville & Exeter is a five-mile railroad connecting with the Frisco at Exeter, down in the southwest corner of Missouri. Both railroads use the same station and the C&E says "Meets all Frisco trains," which is one each way. The 345 is the road's one locomotive, and, as the shape of the number plate hints, it is ex-Frisco 345. The road is not, however, a subsidiary of the larger system, although it was assigned to the Frisco-Rock Island grouping in the never-carried-out I. C. C. consolidation plan of 1929. The present company, chartered in 1919, succeeds the Cassville & Western, which built the road in 1896 at a cost of approximately $50,000.

Trains

Richard H. Jans, U. S. Geological Survey, Washington, D. C. See page 2.